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ABSTRACT

The future of the political, social, cultural, and economic sectors will depend on the contributions of today's students. In rethinking education to cope with rapid change, innovation, technology, and research are indispensable tools of education. This book is a synthesis of ideas contained in papers presented at a symposium sponsored by UNESCO's Asian Centre of Educational Innovation for Development. Part 1, "Perspectives of Change," includes chapters entitled "Time: Change: Education" and "The Framework: Emerging Growth Points: Problems." Part 2, "Prospects," includes the chapters, "Envisioning Future Education"; "Educating System as Open System"; "Knowledge-base of Education"; "Knowing-Learning-Teaching: The Process"; "Values: The Centre that Holds" and "Implications for Planning of Education." An annex provides a list of speakers and their papers. (LBG)

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APEID

EDUCATION FOR THE TWENTY-FIRST CENTURY: ASIA-PACIFIC PERSPECTIVES

Raja Roy Singh

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EDUCATION FOR THE TWENTY-FIRST CENTURY: ASIA-PACIFIC PERSPECTIVES

Raja Roy Singh

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Part One

PERSPECTIVES OF CHANGE

PREFACE

The future scenarios of the political, social, cultural and economic sectors will depend on the contributions of the students of our schools today. More than ever before, education must be visionary and future-oriented, in the face of stunning scientific and technological innovations and changes, unprecedented socio-economic challenges and opportunities, surprising socio-political reforms, and amazing cultural reawakening.

In rethinking education to cope witn rapid changes at the threshold of the twenty-first century, innovation, technology, and research are indispensable tools of education. Failure to innovate by and large means repeating yesterday's educational programmes and strategies tomorrow, which will only further jeopardize education's reputation as contributor to development efforts. Educational innovations are imperative, and would no doubt be effective if they are research-based and imbued with technology of education (i.e. systematic approach to the teaching-learning process); and technology in education (e.g. use of hardwares and softwares).

It is for the above underlying assumptions that the Asian Centre of Educational Innovation for Development (ACEID), UNESCO Principal Regional Office for Asia and the Pacific (PROAP), Bangkok convened a *Regional Symposium on Qualities Required of Education Today to Meet the Foreseeable Demands of the Twenty-First Century* from 16 to 18 August 1990 in Bangkok. The Symposium was organized immediately preceding the Twelfth Regional Consultation Meeting (RCM) on the Asia and

Pacific Programme of Educational Innovation for Development (APEID), 20-27 August 1990, and the Programme Development Meeting (PDM), 28-31 August 1990.

Nine eminent thinkers in Asia and the Pacific were invited to address the Symposium:

1. Dr. S. Maqsood Ali, Member of the Planning Commission, Government of Bangladesh, Dhaka, Bangladesh
2. Mr. Isao Amagi, Chairman, Japanese National Commission for UNESCO, and Special Adviser, Ministry of Education, Science and Culture, Tokyo, Japan
3. Dr. Peter Ellyard, Director, Australian Commission for the Future, Victoria, Australia
4. Mr. A. Kadir Jasin, Editor, New Strait Times, Kuala Lumpur, Malaysia
5. Prof. Kim Duk-Choong, Professor of Economics, Sogang University, Executive Counsellor, Daewoo Corporation, Seoul, Republic of Korea
6. Prof. Chitra Naik, Honorary Director, State Resource Centre for Non-formal Education, Indian Institute of Education, Pune, India
7. Dr. Raja Roy Singh, Former Assistant Director-General/Director of UNESCO Regional Office for Education in Asia and the Pacific, Evanston, Illinois, U.S.A.
8. Fr. Miguel Ma Varela, President, Association for Non-traditional Education in the Philippines, Metro Manila, Philippines

9. Dr. Prawase Wasi, Ramon Magsaysay Awardee, and Professor of Medicine, Chairman of the National Epidemiology Board, Siriraj Hospital, Bangkok, Thailand.

The chairmen and/or senior members of the National Development Groups (NDG) on APEID from 26 out of 29 Member States of APEID, not only listened to the above-cited nine prominent speakers, but more importantly they debated with the speakers on the views expressed. It is to be noted that the chairmen of the NDG are mostly Secretaries of Education or their equivalent in APEID's Member States, namely, Afghanistan, Australia, Bangladesh, Bhutan, China, Democratic People's Republic of Korea, Fiji, India, Indonesia, Iran, Japan, Lao People's Democratic Republic, Malaysia, Mongolia, Myanmar, Nepal, New Zealand, Pakistan, Papua New Guinea, Philippines, Republic of Korea, Samoa, Socialist Republic of Viet Nam, Sri Lanka, Thailand, Tonga, Turkey and USSR.

The UNESCO Secretariat of the Symposium consisted of the following:

1. Mr. Hedayat Ahmed, Director, UNESCO PROAP
2. Mr. Shozo Iizawa, Deputy Director, UNESCO PROAP
3. Mr. Leonardo de la Cruz, Head, ACEID, UNESCO PROAP
4. Mr. Prem Kasaju, Specialist in Developmental Research in Education, ACEID
5. Ms. Lucille Gregorio, Specialist in Science and Technology Education, ACEID
6. Ms. Charatsri Vajrabhaya, Programme Specialist in Educational Innovation, ACEID
7. Mr. Takao Kamibeppu, Associate Expert, ACEID

The UNESCO Secretariat is most grateful to the speakers for honouring its invitation and sharing their views on the future of education, and education for the twenty-first century.

Gratitudes are due to the chairmen and senior members of the NDG of APEID, most of whom served as discussants of the papers, for their dynamic intellectual dialogues with the speakers, and among themselves. These debates brought into focus some of the issues and problems faced by APEID Member States in charting a preferred future for education. The discussion of various scenarios of the twenty-first century also became an invaluable input into the 12th RCM of APEID and the PDM, especially in regard to the priority programmes and strategies of APEID during the next project cycle, 1992-1996, as well as at the threshold of the twenty-first century.

The UNESCO Secretariat is most appreciative of the contributions of resource persons who helped the Secretariat in taking extensive notes of the deliberations, in having post-session interactions with the speakers, and in preparing the summaries of the deliberations on each of the papers, which became one of the springboards for the discussions of programmes for the fifth cycle of APEID. The resource persons were:

1. Prof. Kerry Kennedy, Dean, School of Education, University College of Southern Queensland, Toowoomba, Australia
2. Dr. T.N. Dhar, Former Chief Technical Adviser (UNESCO), India
3. Dr. Milagros Ibe, Professor of Science and Mathematics Education, College of Education, University of the Philippines, Quezon City, Philippines
4. Dr. Panom Kawkamnerd, Director-General, Department of Curriculum and Instruction

Development, Ministry of Education, Bangkok, Thailand

5. Mr. J. Ratnaïke, Consultant to ACEID, UNESCO PROAP, Bangkok, Thailand

The Secretariat is grateful to the Governments of Australia, China, India, Iran, Japan, New Zealand, Republic of Korea and Thailand for their voluntary contributions to APEID, part of which was used to finance the above-cited Regional Symposium.

The wealth of knowledge, viewpoints and intellectual interactions expressed during the Symposium would not have been properly synthesized and published in book form, had it not been for the kind agreement of Dr. Raja Roy Singh, Former Assistant Director-General/Director of UNESCO Regional Office for Education in Asia and the Pacific, to write a book on how education is perceived for the Asia and Pacific region in the twenty-first century. He not only made full use of the ideas presented at the Symposium, but also added his own perception and vision of the preferred future of education. UNESCO PROAP wishes therefore to record its profound thanks and gratitude to Dr. Raja Roy Singh for his acceptance of this task, for his total commitment and dedication to the education of future generations of the children of Asia and the Pacific, and for his constant readiness to make intellectual contributions towards the fulfillment of the mission of UNESCO.

Hedayat Ahmed

Director
UNESCO Principal Regional Office
for Asia and the Pacific

INTRODUCTION

There is all too evidently the phenomenon of "end-of-century" thinking, as the twentieth century draws to a close. There is, however, also a widely prevalent sense that the pace of change, even turbulence, is accelerating as never before. The next few decades, a generational span, may be as different from the current half-century as the half-century has been from the last hundred years. What may these changes signify for education? How does education respond? Traditionally education has been more pre-occupied with the pressures of the present rather than the anticipations of the future. A new context seems to be unfolding, in which the future has to be more deliberately thought of. The image of Asia as plunged in thought while the legions of change thunder pass does not quite hold.

The UNESCO Principal Regional Office for Asia and the Pacific (PROAP) and the Asian Centre of Educational Innovation for Development (ACEID) convened in Bangkok in August 1990 a regional symposium to deliberate in the Asia-Pacific context on the issues of change in education for the twenty-first century.[1] Speakers and discussants at the Symposium represented different

1 The full title of the Symposium is "Regional Symposium on Qualities Required of Education Today to Meet Foreseeable Demands in the Twenty-first Century" (Bangkok, Thailand, 16-18 August 1990)

scholarly and professional backgrounds and came from different countries in the Asia-Pacific region.[2] It was my privilege to participate in the Symposium and take part in the discussions not only at the Symposium but very productively in a variety of personal as well as informal small group discussions. The give-and-take of these informal discussions was a stimulating experience to which I owe the first impulse to write on the subject. With the courteous encouragement of ACEID, I have given way to that first impulse. This publication is not a report of the Symposium; the views expressed are those of the author and do not express the views of UNESCO or those of the Symposium participants.

The reflections on the surmising of education are in the Asian context. The perceptions, whether made explicit or otherwise, are of the historical trends and persistent problems and development aspirations which underline the regional scene. This may seem to tie the surmising issues to a specific context and is open to at least two opposing reservations. On one count it may be pointed out with justification that general reflections on the nature and process of education are equally applicable to other and different areas and contexts. On the other hand, it may be argued that in a region as diverse as Asia-Pacific is, any set of issues cannot possibly fit all countries in any uniform way. In response, it may suffice to say that the questions that are raised in the issues, or "the issues behind the issues" derive their wider applicability precisely because they are grounded in particularities. To this may be added the observation that in the fundamental processes of education, there are more commonalities across national boundaries or development divides than in most other human endeavours.

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2 At Annex A is given a list of speakers and the titles of the papers they presented at the Symposium with the code numbers of the papers. The papers are cited in this publication by their code numbers.

The presentation in the book is in two parts which are titled **Perspectives of Change** (Part One), and **Prospects** (Part Two). They are indicative of the assumptions on which the role of education for the future is surmised. The point to emphasize is that the surmising is not about what the future will be, but about the consequences and imperatives for the development of education which flow from the issues as they are forming. The point is made repeatedly in the book that so far as education is concerned, the future is already now. Educational re-direction and reform is not seen in the extended time-frame of the new century, but rather in a generational span of two or three decades.

The main theme in Part One is that of change. To think of education in a time-perspective is to think in terms of change, and change implies choice. Education may be seen as at the cross-roads of development choices. What are the forces which bear on these choices? There was a remarkable degree of convergence in the views of the participants from Asia-Pacific at the Symposium on this question. Apart from the general formative trends which seem to hold for all countries, there would be country-specific factors. The general formative trends are both positive and negative. Among positive ones are knowledge explosion, notably science and technology; the development quest of the nations for better quality of life; a resurgence of human spirit for ending marginalizing; emerging interdependent world. On the negative side are problems of mortal danger to mankind such as: science and technology applied to destructive purposes; environmental degradation; population growth; and a crisis of human values.

The role of education is not one of following and reacting to trends. Education has to be in the lead and play a major role in societal development of the future. At that point, Part Two, **Prospects**, takes up the theme of envisioning the education to create the future. The core elements of the envisioned education are centred on the human being and on human development. This

calls for a holistic view of the educational process and a fundamental *qualitative transformation* of education in terms of its content, methods and outcomes. Crucial in the qualitative transformation process are: learner-driven learning, creativity, values. Both the education system and the educational process should serve to realize the learning society. In this process, values form the centre that holds together the individual and society through the flux of change.

The surmising of education for the future is not a speculative exercise. In the concluding chapter 8, some of the practical implications are discussed. Future surmising should add a new dimension to the planning of education and to educational policy-making processes.

This book is offered in the hope that it will help in some measure in the ongoing debate and thinking in the region on the reform and reorientation of education.

Gratefully acknowledged is the help and encouragement of Mr. D.J. Vickery by his comments and criticisms on the earlier paper by the author, on which the present publication is based.

I am indebted to the participants at the Symposium and to friends and fellow workers, too numerous to mention individually, for the comments and guidance they offered me in the preparation of this publication. I owe a special debt of gratitude to the Asian Centre of Educational Innovation and Development (ACEID), notably Mr.Leonardo de la Cruz, Miss Charatsri Vajrabhaya, and Miss Kularb Buranamontri for reviewing the draft and helping to give it form, and the Library of the Regional Office for making available to me its splendid reference facilities, and finally, the Publications Unit of the Office for making the publication possible.

May 1991 *Raja Roy Singh*

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Chapter One

TIME : CHANGE : EDUCATION

Time Future

The perception of a difference between "before" and "after", lying on either side of the present moment, is the stuff of daily experience from which the regularity of everyday life proceeds. There is also a sense that "before" is irreversible, while "after" except that sliver of time that is bound to the immediate present is unknowable, unpredictable, unforeseeable. However, the human quest to know, to predict, to anticipate has continued unflagging. Its nature however, over time has changed in the consciousness that possibly the future time is not after all unidirectional in the image of "time's arrow", but has multiple possibilities.

At one level of perception, unrelated to exercises in predictability or anticipation, future-time is a dimension of existence and cannot be apprehended apart from it. This is time-in-life as seen by the sage, the seer, the rishi, the roshi. One of the Symposium speakers[3] recalled how the cultural heritages handed down by the seers fashion the profoundest awareness which elevates life above the constraints imposed on it. In his words[4]:

3 See page 1 of Introduction for the full title of the Symposium, and Annex A for the participating speakers and the papers they presented (referred to hereafter by their code numbers)

4 SYM/M.A-1

> *"I have inherited these ideas from four great religions: Buddhism, Hinduism, Islam and Christianity. All of them have taught me one thing in common: I am important as a creation of God and my future is linked to a cosmic universe. I therefore .... talk about the future not only in terms of two or three decades but also in terms of my eternal existence .... Further, my existence in future is linked with my existence in the present. My present action decides my future. How I live my present, therefore, matters."*

Yet another "seeing" and "revealing" the future-time is prophecy. In its exalted form, it is a breaching of time's irreversibility at the points where time and transcendence intersect; it implies a very special relationship between human events and time and the time-less. At the human level, prophecy is forecasting the future by inspired action, a matching up of facts to vision. It is in this sense that a speaker at the Symposium invoked the capacity to make a prophecy[5]; he said:

> *"While we cannot deliver the whole future we would prefer for ourselves, we can still deliver a fair proportion of it. This is provided we take the trouble to carefully articulate where we would like to go; to make a prophecy. What we then need to do is to act to help realize as much of that prophecy as is possible. Therefore the first suggestion .... about educating for the 21st century is that we must better develop our capacity to make visions."*

The realm of the seers and prophets is vision-centred. However far into the future it may extend, indeed to infinity, it rests basically on changing the present, the human kind, towards actualizing the future.

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5 SYM/P.E-4

In the practical domain, the desire to know the future or to predict its nature and anticipate its likely occurrences stems from the desire to gain a measure of control over it. The conduct of daily life would be impossible if its regularities were disrupted in chaos. These regularities largely fashioned by the present and the recent past can, however, convey a sense of certitude only in the short-term future; the longer the time perspective, the greater the degree of unpredictability. This is notably so in the dynamic – as opposed to the mechanical – realm of human actions and choices. At the Symposium one of the speakers[6] referred to the uncertainties that hedge predictions, saying, *"More often than not predictions have gone wrong partly or entirely, and the realization has grown that since there is no precision in human actions and reactions, presaging the future of mankind with exactitude is just not possible. Yet, planned preparation for the future has been found necessary in most countries because even a broad charting of future paths does seem to help in contending with eventualities whenever they occur."*

Seemingly, human "rationality" is more comfortable with certitude and predictability than with the free play of choice and uncertainty. The laws and predictions of space-time events in the mechanical universe have an attractive ring of finality to a rational mind. In relation to the human society, the images or laws of development propounded by the Utopians or by "scientific" thinkers are but variations on the themes of inevitability and necessity. In this view there is only one future for the human society towards which all the past and the present are propelling irresistibly, inevitably. Speculation about the future, it would seem, attracts nihilisms of all sorts. On the one hand there is the nihilism of the notion that inevitability determines the future. On the other hand, there is the nihilism of the proposition that there is no future except in mankind's individual or collective

6 SYM/C.N-6

imagination, and that consequently the future has to be invented anew in order to give it reality.

Future as Possibilities

The future is not a single, unidirectional track; nor is it a void, rather, it is multiple possibilities; indeed, not a single future but a number of possible futures. In human society, the conditions underlying the multiple futures as possibilities are in themselves various. The experiences, insights and trends catalyzed by the past and the present, as much as the expectations and aspirations towards the desired images of the future, go into the complex web of possibilities which constitute the future. Quite clearly the future is not formed by merely projecting the past and the present; also it is not only the consequences of present actions. What gives the past and the present their influence in the shaping of the futures is the collective, societal awareness of possibilities and of choice.

In terms of practical action, the view of the future as involving decisions regarding the choice of the "preferred" future in the range of multiple possibilities gives a totally different orientation to planned action from the one implicit in the usual forecasting methods. This is notably so in relation to the human systems, such as education. Educational development becomes more consciously future-oriented rather than being only a medium for the transmission of the past; the setting of goals for education becomes a crucially important strategy in effecting change. (We revert to this theme in the concluding chapter).

In education, the future is intruding in the present in many important ways. Children and young people who are in school presently will be manning the work places in the first decade of the new century; they and the successive cohorts in the next generation or so will be at the levers in their societies. With the accelerating pace of change, the generational shift is not a mere

transition; it is a new beginning. This is true of all societies, notably so of the developing societies with a large proportion of young people. As they in rising numbers pass through the life channels, how they are endowed or deprived in the present decades will largely determine the "preferred" future of their societies by generating enormous energy and power to create a better world. In a very real sense, that future is now.

"Future that is now" is but a restatement of the energizing awareness that underlies setting of future-oriented goals by which the present realities are re-shaped and new possibilities are generated. The setting of goals in a human system is not primarily a matter of techniques. It is fundamentally a function of judgement, of insight, of visioning by society – the seers' function. Without vision the future may be only an illusion. Vision-driven, the present and the future begin to mesh in and the uncertainty of the future is mitigated by the present foreseeing. A Symposium speaker addressed this issue, saying:[7],

> *"We need to think further ahead than we habitually do. In many cases, this will mean envisioning the world I would like to see when my own child is my current age. What opportunities will there be? What threats will we face? Increasingly, we will be asked to do this anyway, whether we like it or not .... to think about actions we need to take now in order to deliver outcomes 40 years ahead."*

Change Process and Education

Bertrand de Jouvenel makes the case[8] that "if society tends on the whole to conserve the present state of affairs, our present knowledge has a high chance of being valid in the future. On the other hand, the future validity of our knowledge becomes

7 SYM/P.E-4

8 Bertrand de Jouvenel. **The Art of Conjecture**. Basic Book Inc., New York 1967

increasingly doubtful as the mood of society inclines towards change, and the changes promise to be more rapid." Further, it should be added that the perception of future-time has almost no role in a situation where neither knowledge nor societal state is subject to change. Change then is a decisively defining element in the choices that may be made in future possibilities. Moreover, a society that remains rooted in its "present state of affairs" and its "present knowledge" cannot subsist in isolation in the fast changing knowledge world of today, however hard it may try. The ongoing technological, social and developmental changes will sweep the cocooned society into a future state of affairs without choice or control of its destiny, a passive recipient and not an active agent.

Education in its widest sense is at cross-roads of societal development and knowledge, and importantly, of dynamic change processes and the capacities to make choices. The key to understanding the situation of education is to recognize that it is not an isolated phenomenon nor a dependent one; it receives and contributes; it creates and is created. It is at its creative best when it is interwoven with the total social-human-knowledge environment of the future.

In the Symposium, the creative role of education in future-oriented development was specially stressed. A speaker used the physicist's term to describe its role as "unified field-force"[9] to indicate the interactions between human, social and environment "particles". He argued: *"Education does not exist in vacuum. It is determined by political and cultural milieu, beliefs, doctrines, economy, social mentality and predominant world views. These determining environments are now quickly changing. We should be in a position to understand them and to be able to design education*

9 SYM/P.W-9

as the unified field force for development .... and create a healthier future."

In emphasizing the need for future-oriented development of education, one is in fact pointing to the limitations of "re-active" education, that is education policy and practices which only attempt to respond to changes or crises as they occur, or more often, after they have occurred. The image of education as a "conservative" force refers to this passive-reactive functioning of the education systems rather than to the element of continuity by conserving what is worthy. The reactive education policies and practices have in a high degree a propensity to homogenize and to stress "behavioural objectives" focused on the individual. On the other hand the future-oriented education is actively promotive of innovation and dynamically evolving social goals. This dichotomy runs like a thread through all the discussion in the following chapters.

"The future is not some place we are going to, it is one we are creating"[10]. Creation implies a vision and choice. It redefines knowledge; no longer is it sufficient that to know is only to distil from the past; to know is also to question and to exercise choice and discernment about the future and to act accordingly.

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10 Quoted in **Report of the Symposium** (International Symposium and Round Table, Beijing, China, November-December 1989)

Chapter Two

THE FRAMEWORK: EMERGING GROWTH POINTS: PROBLEMS

Educational Domains

Education is implicated in several domains which interpenetrate each other and give significance to each other. These domains cover a wide and multi-dimensional spectrum. There is at one end, or rather at the centre, the individual learner and the learning process and what one learns and in consequence is able to give or make use of. There is the universe of knowledge including skills and empowerments, and the societal domain which defines the individual's living as well as that of the group. Each of these is a growing and developing organism, which gives a dynamic character to each domain and to the whole complex. Each domain grows in magnitude, in complexity, and in organization. The educational process in the individual is more complex now than in the past; it is also organizationally different with the growth of the education systems. These systems reach out to whole populations who are involved in the educational process in one form or another on a scale of unprecedented magnitude. It is these domains and their interpenetrations that form the framework in which the future education of a society should be seen.

The prospects of education in the future, even a decade or generation ahead, cannot be foreseen in terms of precise predictions. One can however discern certain manifold trends in the domains, which will not only set the future direction of education, but will also chart the pathways for general societal development. Quite clearly, knowledge and its growth and increasing globalization is one such trend with multiple consequences. Another force equally significant for the future, though not quantifiable is the crystallization of long historical struggles through which social goals and values have emerged which are now irreversibly situated in the mainstream of human development. These goals centre round ideas of social equity, human rights and freedoms. Increasingly they have come to embody the profoundest aspirations of the human spirit that define the pathways to the future. The interplay of these various forces is writ large in the history of the twentieth century now drawing to its concluding decade.

This century has been the cruellest period in the entire history of mankind for what man has done to man – and continues to do – and for what man has done to the future generations by what he has done – and continues to do – to the environment. But this century is also the period, unique and beyond compare, for the human achievements in knowledge. And it is also the period that now bears witness to the unfolding and universalization of the social imperatives, social equity and justice, human rights and freedoms. It is as if history is bearing witness that "every danger carries within itself a saving grace" (Hölderlin). Another area of crucial importance for future education is that defined by persistent and cumulatively growing problems which are spin-offs of contemporary technologizing civilization. Environment is an outstanding example. While the problems are technology-created, it is clear that they are least amenable to merely technological solutions. There is an increasing lag between the proliferating problems and their technological solutions. Indeed,

all experience goes to show that technology-created problems do not yield to technological solutions alone.

There is a large measure of agreement among educational thinkers in Asia-Pacific countries about certain broad-range central trends of development which have a bearing on the choices that may be ahead in changing education. The major components of these trends are suggested below to be seen as framework for identifying some of the changes.

Exploding Knowledge : Science and Technology

The exponential growth of knowledge makes every decade a watershed in human history. Humanity's life and destiny and their meaning and purpose are perhaps more than what this mode of knowledge comprises; but without this knowledge surge in history, mankind surely would have been so much less. The sense of progress in the life of mankind owes much, possibly all, to the phenomenon of growing, deepening, exploding knowledge.

In the last three centuries or so, science became the mainspring of the growth of knowledge. Later science as technology has become the moving force. The accelerating pace of science and technology-based knowledge has been extraordinarily high. It is estimated that now the body of this knowledge is doubling every 10 to 12 years. To get a measure of this pace, it means that the new discoveries, inventions and developments in the decade of the 1990s would be equal in volume to the knowledge earlier gathered over centuries. And it is not only the accelerating pace that holds attention; equally amazing is the spread that covers every segment of existence. The report of the Round Table Symposium (Beijing) draws attention to these developments:

> *"The world has never changed so rapidly. Beginning in the 1950s a series of technological revolutions commenced. Three of these now exist. They are based on the technologies of the silicon chip which has generated the information revolution, the manipulation of the DNA molecule which has created the biotechnology revolution, and the creation of new advanced industrial materials. There is no reason not to think that these three will not be joined by others in the 1990s."*[11]

Science and technology-based knowledge revolution so vividly – and fearsomely – being demonstrated in the latter half of the present century, has characteristics of special significance for future-oriented education. First is the fusion of knowledge and its application, which has been the fertile ground for generating more knowledge and more applications. The great turning points in the evolution of human societies are marked by new knowledge, new inventions, and new applications: thus the transition from the agricultural base to the industrial base, and now in the advanced countries, from the industrial base to automation-communication technology base, ushering in what has been called the"post-industrial" society. A notable characteristic at each transition is that both components, namely theoretical knowledge and applied knowledge, increase exponentially. Scientific knowledge and technological knowledge have to go hand in hand. The growth is marked by widespread spin-off effects. A Symposium speaker[12] pointed out that *"when an advanced and excellent technology is widely diffused to other fields, it becomes innovative technology by its spin-off effects. It is indispensable that a new technology should be developed into*

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11 **Report of the Round Table** (International Symposium and Round Table, Beijing, People's Republic of China, November-December 1990)

12 SYM/I.A-2

industrial technology and a system of excellent management, in order to contribute to the development of industry and business".

There is yet another characteristic of advancing science and technology. Each advance marks a new level of integration in the knowledge domain. Traditionally man has tried to understand reality by breaking it down into different disciplines and separating the process of understanding from the process of action. But now, increasingly, any problem calls for knowledge from a range of disciplines. The capacity to see a situation in wholeness and with the inter-linking of the parts is an important, indeed indispensable, way of accessing knowledge and creating more knowledge.

The revolutionary developments in science and technology have led in the last few decades to the emergence of "knowledge-based" societies in which the central capital is knowledge. The notion is increasingly used to characterize "developed" societies as opposed to the "developing" societies. Science and technology-based knowledge determines pervasively the economic production structures and has increasingly acquired, as it were, a life of its own. Increasingly the organizational structures of economic and social life are dominated by such knowledge embodied in computerization and cybernation and managed by "specialists" and large-scale, centralized bureaucracies. Society's values and standards are increasingly moulded by influences deriving from these complex interpenetrations and by the new elite of "knowledge workers". The Round Table (Beijing) referred in its discussions to some of the positive ways in which knowledge-based developments in the developed countries hold out promise of the future. It said:

> *"Increasingly, wealth and prosperity are dependent on knowledge and skill. Developed countries have never been so creative and innovative. They are deluging the world with new products and services based on their brain-power and creativity. Their economic prosperity is based on the utilization of intellectual property and resources in the arts, the sciences and the technologies, and through the development of highly skilled and continually learning work-forces."*[13]

Science and technology are now established as forces of great power in the shaping of the futures. The developing countries face the challenge of creating for themselves pathways of learning which may lead to the mainstream of the knowledge revolution. It is clear that this cannot be accomplished by one-small-step-at-a-time progression. It has to be a development leap. Nor do the pathways lie along the imprints of other development models. They have to be creatively adapted to the particular contexts within the framework of overall development goals.

Education is central to the knowledge-based society because it is the human being who is the creator, the preserver and sometimes tragically, the destroyer of knowledge. Without anticipating the discussion on this theme in a later chapter, we may indicate here in broad terms what this means for education seen from the perspective of developing Asia-Pacific.

A"knowledge-based" society is one that derives from human potential. It is an "open" society, because it is not about inert nature or about tools; it is about how men think and create and become free. Its core is thinking, creativity, and inventiveness. Past experiences and models do not respond to this core in a changing world. In this aspect, science and technology are one of the important sources of empowerment of education to deal with and respond to the demands and the unpredictabilities of the

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13 op. cit.

changing world, and to push back the "inner limits" which man builds round his capacities in the form of prejudices, superstitions and ideological myopia.

Intellectual institutions (universities, colleges, research institutions, etc.) of the education complex have an increasingly crucial role in societal development. Their functions are three-fold. They are knowledge generators; they are also centres of innovation; and importantly they are service centres for their communities, facilitating and promoting change and development. In the developing countries science-technology's role in education is defined by these three functions held in dynamic balance. Given this, the complex of intellectual institutions will grow and diversify, embodying new institutionalized forms of development and innovation processes, and in modes of operation and control which are likely to be highly decentralized rather than monopolistic of knowledge-based power.

For developing Asia-Pacific, science and technology are important, even central, for the alleviation of the socio-economic problems. One of the Symposium speakers alluded to it in the following terms[14]:

> *".... it is science alone that can solve the problems of hunger, poverty, insanitation, illiteracy, superstition, deadening custom and tradition .... halt the degradation of the human condition .... and bring about socio-economic and political changes conducive to development, to reducing the miseries and stagnation of traditional societies through modernization ...."*

The world-wide experience gives little assurance that the goal can be reached by following the same "development models" which have demonstrated the power and also the significant

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14 SYM/C.-6

limitations of science and technology. The search for suitable alternatives is an important component of the "development quest" (discussed subsequently).

To ignore the limitations of science and technology would be to distort education's full contribution to human well-fare and to create a fatal flaw in the agenda of societal progress. The first limitation is epistemological. The scientific method is essentially analytic and reductionist and brings into play only the related range of cognitive capacities of human intelligence. Holistic phenomena, such as the biological, are not capable of being understood by the reductionist method. In consequence we find that a whole range of human apprehensions such as intuition, ethical thinking, aesthetic perception are either treated as invalid or as irrelevant. In education these modes of human apprehension are of the very substance of educational action if education is to be anything more them a mechanical exercise in conditioning.

Human sensibility has been riven by a deepening division between the scientific-technological mode of knowledge and the intuitive-holistic mode. The scientific-technological pursuit is increasingly perceived as carrying its own justification and beyond questioning the validity of the use to which its results are put. In effect there is a growing disjunction between science-technology and wisdom – that all encompassing attribute of human consciousness. A Symposium speaker[15] expressed this theme as follows:

> *"Unlike the science paradigm which totally rejected the ancient spiritualistic-holistic paradigm, the newly emerging world view will not reject science. Science and Mind will be integrated in the middle path, elevating mankind to a new level of wisdom. .... Integration will be the new paradigm."*

15 SYM/P.W-9

Another speaker[16] urged, *"mankind would no doubt continue to seek knowledge through science, rational argument, and intuition in order to make peace with nature. But at this crucial moment of evaluating the past, it may need more wisdom, more humanity than mere technical knowledge."*

All the experience of the current deepening crises of environmental degradation, pollution, ecological imbalances, population problems and resources depletion underlines the fact that technology cannot solve the mortal problems that it creates. More than half the total number of scientists and technologists are engaged in inventing and developing lethal weapons of mass destruction. A very substantial proportion of the "science-knowledge explosion" has derived from work on the means of destruction. The dread pursuit has now entered the biological sphere. "Human" and genetic engineering have the power to modify human bodies, characteristics and mental abilities and intervene in the course of evolution. Add these profound powers to the economic and organizational structures in which so much of science-technology growth is meshed, and we have to face the dreadful thought that whatever science-technology would make a profit for an enterprise or would contribute to a nation's prowess to make war, that science and that technology would be developed and the "enterprise skills" needed for it would be nurtured. This is indeed a far cry from the hope expressed four decades ago by eminent scientist Erwin Schroedinger when he wrote:

> *"I consider science as an integrating part of our endeavour to answer the one great philosophical question which embraces all others, the one that Plotinus expressed by his brief: "Who are we?" And more than that, I consider*

16 SYM/M.V-8

this not one of the tasks, but the task of science, the only one that really counts."

Whether the knowledge-explosion brings disaster upon mankind or helps to ease the burdens of suffering and realize the hopes for a brighter life for humanity depends on man. It is for him to assign the role that science and technology are to play. Science and technology just play the role that man assigns by design or *laissez-faire* indifference or by a Faustian bargain. In the ultimate analysis the issue is not one of science, but one of values which will guide man's application of science.[17]

"The enemy, be it a city with millions of inhabitants, or a huge aircraft carrier with thousands on board or an ICBM with awesome nuclear warheads streaking across the sky, are merely blips on the radar screen. But the same computer that helps in the designing of the most deadly weapon and simulates death and destruction can also be used to save lives in hospitals, in the air, on the sea and road .... The choice is ours."

And this is again where education comes in. It cannot offer the whole solution, but in any solution, education is at the core wherever human mind, will and action are involved. The type of knowledge that gives us even more knowledge and invention has also to deepen to those sensibilities, perceptions and insights that help us to judge and discern what knowledge is most worth. The stultifying effect of arid rationality on human sensibility is movingly described by one of the greatest of scientists Charles Darwin in his auto biography. He wrote:

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17 Symposiumist Mr. Kadir Jasin (SYM/KJ-5) expressed the responsibility of man's choice in the following graphic terms,

> *"Up to the age of thirty, or beyond it, poetry of many kinds .... gave me great pleasure, and even as a school boy, I took intense delight in Shakespeare .... pictures gave me considerable and music very great delight. But now for many years I cannot endure to read a line of poetry .... I have also lost almost any taste for picture or music, ... my mind seems to have become a kind of machine for grinding general laws out of large collections of facts, but why this should have caused the atrophy of that part of the brain alone, on which the higher tastes depend, I cannot conceive.... The loss of these tastes is a loss of happiness, and may possibly be injurious to the intellect, and most probably to the moral character, by enfeebling the emotional part of our nature."*

The Development Quest

Development is the expression of one of the profoundest forces shaping the current decades and setting the directions for the future. The development process has manifold dimensions and is consequently seen with different emphases in different societies.

Development has been a search rather than an achieved goal, but nothing like the collective consciousness that it now represents has occurred at any time before on an almost universal scale. The development search is worldwide involving in different ways, all societies. Seen in the broad perspectives of history, the development quest marks in essence the heightened periods when the societies make choices of their future. What distinguishes the present century, notably the latter half of it, is the increasing awareness of the act of choice implying a commitment of human and economic and psychic resources to following up the choice. In the developing countries, development has served as a magnet for national aspirations, more often frustrated than realized, but continuing to carry an emotional charge, the feeling of

controlling one's own destiny. In the advanced societies there is a compelling consciousness that the expanding economies and the advancing technologies are assuming a life of their own at the cost of the human agenda and the environment.[18] Underlying the manifold expressions of development is now the recognition that development cannot be less than the realization of the potential of human personality. As education is a vision of the individual, so development is a collective vision of a society for itself.

The universalistic nature of development as a vision of human societies is almost lost in the development gaps which divide the advanced countries and the developing countries globally, and within countries, (advanced and developing alike), the rich and the poor. These divides are widening; the poor become poorer and the countries with poor resources slip further down the scale.

To illustrate in concrete terms, a Symposiumist described the conditions in the developing world, pointing out that:

> [19]*"Almost a billion humans today are literacy deficient and therefore incapable of participating effectively in community living. Much less are they able to assume meaningful roles in development activities."*
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> *"One billion humans are living below the poverty line. More specifically, 20 per cent of the "haves" today own or use for themselves 80 per cent of the earth's assets and income. We are not surprised then to learn that during the decade of the 80s in the United Nations family of 165 sovereign states, 75 per cent were classified as "poor".*

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18 At the Symposium Mr. Isao Amagi (Japan) made the point with special emphasis, saying "... we are facing a limit of natural resources and global environmental issues. Strong technical-economic development brings about crises in the welfare of human beings and in culture." (SYM/I.A-2)

19 SYM/M.V-8

"One-and-a-half billion humans are in need of adequate medical facilities."

"Seventy-five million humans die yearly. Of those 50 million or 66 to 73 per cent die because of starvation."

"Undernourished children are a class by themselves. There were 2.2 billion of them in the 1980s."

Another Symposiumist[20] described the economic and social wastelands of an earlier era from which the developing countries are now trying to re-construct their future:

"The rural areas of the newly liberated (from colonial rule) nations had become impoverished. The traditional skills of the artisans and their local markets had been destroyed by exported foreign goods. Landless and small farmers who abounded in the rural population, suffered from chronic underemployment. Lack of health services and communication facilities compounded their difficulties. Perpetual, heavy indebtedness caused by periodic unemployment and lack of suitable learning-networks for improvement of skills and basic education, left these marginalized rural people to their own fate which in many cases meant high child mortality, maternal mortality, poor health and nutrition for the entire family, and a high birth rate. The economic base of the rural areas has been weakened right down to the roots and despite the welfare and community development programmes which began as far back as the 50s, the rural situation has not materially improved. Disparities have further grown as between the urban and the rural areas, in spite of the rise in the GNP in some of these developing countries."

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20 SYM/C.N-6

Another speaker[21] pointed out the development divide within the countries:

> *"In the Third World countries which represent the majority of humanity, unbalanced development is a general phenomenon. It is as if there are two countries in one – the modern elites and the rural and urban poor. The modern elites are interconnected to the international elites more than they are to their poverty-stricken fellow nationals who dig garbages for food and subsist on suboptimal income from agricultural products and low labour wages to subsidize the industrial sector. Economic and social gaps are widening leading to social consequences such as uprooting of people, crimes, prostitution, child abuse, etc."*

Because so much of the human *problematique* has an economic cast and economic variables appear to be more amenable to directional control, development was, in the first flush of the quest, equated with economic growth. Development was seen as a set of economic growth targets to be achieved by centralized planning. The human beings became economic commodities with skills to market and incomes to acquire. This approach was reinforced by the application of the statistical indicators of the developed economies to the developing economies in order to measure "underdevelopment." A "catching-up-with-the-developed-countries" syndrome was created which tended to distort the development process. The single-thrust emphasis on industrialization that marked the path of development of the present-day advanced countries has had a greater influence on the development strategies of most of the developing countries than any other factor. There was that spell-binding fantasy that, given a certain rate of economic growth, a country's economy would become self-sustaining and the country

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21 SYM/P.W-9

would have arrived at the table of the rich. No matter that the general masses of people remained deprived and consigned to the anonymity of neglect; the prosperity would "trickle down" in time. There is ample evidence that such "trickling down" does not occur; and that an exclusive focus on economic growth has not only failed to solve social and political problems. Certain types of growth have actually caused or exacerbated them. Has development only succeeded in converting poverty and all that goes with it into "modernized squalor", compounded by population growth and the urban drift?

If the development quest is seen to have run a very uneven course, the lessons of experience are crucially important for the future.

All the experience goes to prove that development that is tied to a single "leading sector" or a "single thrust" leads to magnified crises. Thus the exclusive focus on economic growth has resulted in the developing countries in deepening poverty, creating marginalized population groups, deadly pollution, urban ghettos, social rootlessness and cultural wastelands. At another level, unrestrained consumption styles and material possessions lead to the distortions of societal life by greed and avarice. The single-thrust development based on technology has led to dangerous depletion of non-renewable resources and to environmental degradation and to the dominance of societal life by large-scale centralized organizations. The single-thrust planning has led to the concentration of power, breeding manipulative and arbitrary controls of societal life.

The development quest therefore is also a quest for "another development" calling for new forms of growth which are designed around improving the quality of life of the people. The development paths in this "another development" must start from the human base, measuring the socio-cultural and economic progress in terms of meeting human needs, acquiring knowledge,

realizing aesthetic gains, controlling social problems and enhancing the quality of life so that individuals may be able to go forward towards their own goals of self-realization. The human goals of such development will provide the framework for scientific and technological development the choice of technologies, industries, agricultural promotion and for the organizations, financial and others, as well as the social policies aimed at overcoming initial inequalities. In such development, not bigness for its sake, but rather small technologies and production units, small firms and enterprises, high skill human inputs, are the decisive sources of economic and developmental vitality. The current decade is witnessing the productivity miracle of smallness in the most advanced countries of the world. The largest shares of income growth and employment generation are to be found in small businesses and entrepreneurial units. The key is the high skill and high creative human input.

The report of the World Commission on Environment and Development, *Our Common Future* (the Brundtland Report 1987) has given the world a call for sustainable development with a view to creating an ecologically sustainable world. The concept is no less relevant to the larger "environment of living" and life-support systems in the human values.

There is another important dimension to this humanistic development, brought sharply in focus by the current decades; that is, the ending of marginalization.

Historian-thinker Lord Acton saw human history as an unfolding of the idea of liberty. Despite the setbacks, one would like to believe in this vision and in a broadening movement of human spirit breaking down the shackles of prejudice and rapacity which mankind has been carrying around as its own prison.

This century, notably in the last few decades, is witnessing a unique resurgence of human spirit, struggling into the light from out at the margin – women, minority peoples, the economically and socially dispossessed and politically rendered voiceless. This is a development in irreversible course. The centre-periphery, the first world-third world and similar dichotomies are now worn-out masks. At the same time, this resurgence is shifting the foci of conflict to within the countries – the majority groups and the minority groups, race against race, the holders of exclusive power against the dispossessed. These divisions have underlined that diversity and not uniformity, pluralism and not homogeneity, organic and not undifferentiated, are the paths of development into the future.

It is this resurgence of human spirit which, more than any other force, will define the coming decades – the vast majority of mankind moving out of the shadows of poverty, neglect and anonymity. This development will determine in a substantial degree for the majority of mankind the educational, cultural, economic and political institutions of the future. This surely is the great turning point which will make the future different from the past.

Education is at the heart of humanistic development. The goals of future-oriented education are defined by the development process as the collective vision of the society. Education as knowledge is one of the creative elements in the formation of that collective vision, and is also one of the important means for realizing the agenda of human ascent from the shadows out. Developmental transformation occurs when, and not before, there is a confluence of constructive socio-economic factors, the knowledge base, the engagement of human resources and a fundamental revolution of values. The development process then becomes a holistic structure and no factor in it – economic cultural, social or intellectual – can be understood except in

relation to the whole. Education has a catalytic role in each of the elements as well as in the development process as a whole.

The Emerging Interdependent World

One of the decisive turning points in mankind's progress towards a future that will be different from the past lies in the current developments in human affairs which are drawing the world irreversibly as an interlinked and interrelated entity. National economies are rapidly becoming international and transnational; more than one quarter of the world's gross national product is accounted for by the international sectors. There is an expanding process of international production sharing and a global redistribution of labour and industries. Instantaneous communication which command the business offices or penetrate the homes everywhere are breaking down the walls of seclusion and isolation. As the economic-production factors become increasingly global, they create the conditions for the exploration of resources globally. Research and development as well as managerial resources are created and utilized transnationally. Nowhere is the reality of the new interlinked world more vividly, and even frighteningly, defined than in the problems of environment, pollution, ecological balance or the spread of dread diseases.

One of the Symposiumists[22] saw the powerful forces that have been released in terms of "economic pull" and the "push factor" of fear. He said:

> *"Much of this globalization process is being driven by ... "economic pull" which involves the rationalization of economic arrangements on a regional basis, ... slowly increasing co-operative globalism .... Technology is helping to*

22 SYM/P.E-4

build a single highly networked world. It is already possible for billions of people to participate in a single event (via communication technology) .... Finally, the world is being united by ecologically driven "fear". .... Around the world this fear of major global ecological problems is beginning to enforce further co-operation between nations. .... We are rushing headlong into an era of co-operative globalism while we are barely prepared for it. There is an urgent need for us to create a paradigm of co-operative globalism or we are all likely to be trapped by problems caused by national identity."

Another Symposiumist[23] approached the issues from a somewhat different perspective, specially the question of national or cultural identity.

"In the past people were isolated in cultural pockets. Today, and more so in the future, people are more closely linked into the global community through communication, travels, the market system and the common concern on environment. The latter has no political or cultural boundaries. Cultural differences will and should remain and the global citizen will have to learn to appreciate cultural heterogeneity, to see the beauty of pluralism instead of reacting with hostility to it."

Does the emergence of an interdependent world mean a global movement toward homogeneity and dominant patterns, a monolithic system with one "dominant" language, one controlling structure? Or will the emerging One World consist of different but interacting parts, each part with its own past, present and future? The movement towards a One World vision is essentially of the different parts coming together in new networks of relationships serving the differentiated growth of all. Indeed the globalizing movement itself is leading to a renewal and

23 SYM/P.W-9

resurgence of various languages and cultures. It is the sense of unity through diversity that is the main characteristic of the emergent interdependent world. It implies recognizing differences while being simultaneously aware of the common binding links and responsibilities. This calls for profound social consensus and new values orientation.

It is not only the One World struggling to be born which the issue of pluralism addresses; more immediately, the national societies have to face up to this challenging issue in the diversities of cultures, religions, ethnic groups and languages.

Even while these profound changes are under way, corresponding changes in human awareness, breadth of perception and attitudes are lagging, giving rise to new areas of conflicts, tensions and confrontations. The fact of global interdependence and its attitudinal correlate, the need for mutual understanding and effective co-operation, are being assimilated only too slowly and uncertainly in the consciousness of the nations.

The Looming Problems

The scientific and technological achievements which so compellingly call up future images of co-operative international order have also generated problems that obscure and cloud these images. Indeed the problems rather than the achievements begin to define the future. They are the unique products of modern times. Pre-eminent among them are the problems of environment and the problem of population growth. There are several features which the problems have in common.

Firstly, as pointed out earlier, they are created by the technological progress which however lags in providing the solutions; for example, industrialization in relation to environment or population growth in relation to medical advances. Secondly, these problems are not "origination-bound"; their impact and

consequences become quickly global. Of these problems it can be aptly said, no problem is an island, entire of itself. Driven by the accelerating pace of technological advance, the global problems carry an impending sense of crisis in human affairs and of tragically widening disparities in quality of life among peoples of the world. Thirdly, these problems are bound up in various ways with the realm of human attitudes, perceptions and values. Any solutions of these problems will have to engage in important ways the human realm. The experience is all too clear that a fundamental shift in present operative values and human awareness and perceptions is necessary to complement legislative and other regulatory actions with a view to reversing the course on which the problems of environment and population growth have set mankind.

Broadly speaking, the problems associated with the environment have their origin in the industrialized countries, and the problems of population growth are in the main in the developing countries. They are both of overriding concern in the Asian region where both industrialization and population growth are converging in the current decades.

Environment

The environment crisis is fundamentally the result of unrestrained and improvident consumption and use of natural resources notably in industrial processes and products. In pursuit of short-term gains, man is introducing into the eco-systems large numbers of new chemicals, industrial wastes and pollutants, and in other ways creating biological disorders. Whole water systems are turning into deserts; deforestation is denuding the earth; radio-isotope contamination from nuclear power, land degradation, the rapid extinction of plant and animal species, acid rain, industrial waste disposal – all are rapidly assuming life-threatening magnitude. The ecological hazards are increasing much faster

than the application of solutions. Though they have their origin in the industrialized countries, the newly industrialized countries following the same role model of development are adding to them with equal degree of unrestraint. The consequences are rapidly impacting globally both in the developed and the developing countries, for example, climatic change, ozone depletion, acid rain, water pollution, nuclear waste, etc.

The call for "sustainable development" by the World Commission on Environment and Development (1987) is timely, that is, *"development which meets the needs of present generations without compromising the capacity of future generations to meet them."*

Education's important role in contributing to the creation of an economically and ecologically sustainable future lies both in the domain of values and attitudes and in the domain of knowledge.

In the domain of values and attitudes, sustainable development calls for a new perception of man's relationship with nature, one of harmony and caring instead of control, depredation and violence. In the domain of knowledge, the concept of sustainable development makes it imperative that there be closer integration of the various areas of knowledge which at present are so rigidly compartmentalized. The World Conference on Environment and Development said that we should merge ecology and economics and indeed the natural and social sciences. Similarly the training for professions and trades should include knowledge of ecology and economics. *"An engineer, architect or industrial designer who has a desire to carry out his or her professional practice in an ecologically sound way, will help to create an ecologically and economically sound and secure future for all of us."*[24]

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24 SYM/P.E-4

Population

[25]It is estimated that it took the first sixteen hundred years (AD) for the world population to double from 250 million to 500 million; the next doubling period was two hundred years, and then one hundred years, reaching 2 billion at about 1930. It doubled in the next 45 years, to 4.1 billion by 1975 and shows every sign of topping 6 billion by 2000. Most of the population growth (92 per cent) is in the developing countries. The biggest increases in numerical terms are in South Asia and Africa. Even if there is consistent decline in fertility rates, it will be 40-50 years before an equilibrium level is reached.

The accelerating population growth in the developing countries is changing in important ways the age-composition of the population. Young people under twenty-five now constitute the largest age-group segment.

In the short term the vast increase of the population has created enormous economic problems and social tensions and has widened social inequalities. At the same time the increase in the number of young people can be a decisive force in dynamic cultural change and progress, provided that their development potential and innovative and enterprising spirit are developed and fully mobilized in public policies and actions. Whether these rising numbers of young people are empowered in the current decades by wise educational action or are left to drift by societal indifference will determine whether their passage in the future decades is like unto an angry river in spate or one with dykes and embankments, generating enormous energy and power to construct a better world.

A closely related and equally serious problem is the massive urban drift which is creating super-urban agglomerations

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25 SYM/M.V-8

with totally fragile and inadequate infrastructure and life support systems. More than 70 per cent of these super urban agglomerates are in developing Asia.

While food production has kept ahead of population growth in Asia, thanks to improved agriculture technologies, the life support systems have been put in jeopardy with widespread deforestation, dislocation of river systems and increasing health hazards.

Again it needs to be recognized that the problems which now mark the turning points for the human race are closely inter-linked and interwoven – population growth, environment, the development quest, the knowledge explosion. Are perceptions, attitudes and values which may have served well enough in the past for isolated societies, big or small, good enough for the world now in the making? If these attitudes and values will no longer suffice, then this is the most important premise in designing the education for the future.

Crisis of Human Values

While the knowledge "explosion" is extending man's mental outreach and technology is utilized to bring wealth and economic power at least to a part of the world, the domain of human values has diminished and continues to erode. There is a deepening sense of crisis moving in like a dark shadow. The peoples of the world are being brought together closer to a degree that each and every part is affected by the fortunes of every other. But that very image of the emerging one world reflects back, magnified, the mortal danger to which mankind's future is being committed by the destructive use of the powers that expanding knowledge has helped to create. So it is that the calm and peace of advancing knowledge is seething with the hidden turbulence at the heart of the human condition. More than one million dollars are spent *per minute* to create weapons of mass

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destruction. More lethally, the minds that plan for ultimate destruction are creating new minds that can only function in a destroying environment. It is not that mankind lacks knowledge; it is wisdom that is in crisis, wisdom that Chinese thinker Mencius almost two thousand years ago defined as "the feeling of right and wrong."[26]

Is this crisis the beginning of the moral collapse of the present order set up on a ring of national egoisms, or is it a beginning of a search for a new integration as one period of human civilization draws down to a close?

Whatever in a historical perspective the nature of the crisis may be, the challenge it poses is real enough, and the response to the challenge will determine the moral, indeed the spiritual, orientation of societies in the next century and the role of education in them.

Fundamentally the principal sources of the crisis of values are twofold. The power derived from the unprecedented capabilities for doing things, the know-how, has outpaced by far the capacity of knowing *what and why*. The *know-how* has brought the power to control, to subdue, to direct; and by its very efficacy, it has weakened and progressively displaced the perception and discernment of the ends that transcend the know-how.

Secondly, the sense of crisis is engendered by the economic forces which in conjunction with technology have created new configurations of power, organization and material wealth and, correspondingly, a set of "economic values" which are basically in conflict with "human values". Even more than "technological values", economic values nourished by man's

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26 "The feeling of compassion is the beginning of humanity; the feeling of contrition is the beginning of righteousness; the feeling of deference and compliance is the beginning of propriety; the feeling of right and wrong is the beginning of wisdom. Men have these Four Beginnings just as they have their four limbs. Having these Four Beginnings, but saying that they cannot develop them, is to destroy themselves." (The Book of Mencius)

instinctual drives are deterministic and relativistic. Their harshest, almost brutal, enunciation was made by one of the most brilliant economic thinkers of the present century, Lord Keynes. His judgement made nearly sixty years ago comes through to the present time as if magnified on a screen of global application. He wrote:

> *"For at least another hundred years, we must pretend to ourselves and to everyone that fair is foul and foul is fair; for foul is useful and fair is not. Avarice and usury and precaution must be our gods for a little longer still."*

In the present trends towards this reversal of values when fair is foul and foul is fair lies the crisis of human values and the loss of direction in our lives.

Values are inseparable from a sense of worthiness. They are the very ideas and perceptions through which we experience and interpret our relations to ourselves, to others and the world. They relate to the individual and to society, operatively different but closely interwoven. The crisis of values is thus to be seen both at the individual and societal levels. In the individual it shows itself in a sense of drift and helplessness, in an alienation of meaning and purpose. This alienation may be a result of the neglect and anonymity imposed by poverty or by the impersonality and mindless directional control of technological organization. The individual becomes an object to be manipulated and disposable. At the societal level, the crisis expresses itself in increasing fragmentations and divisions in the population, in the diminution of human relationships, increasing depredation of the natural environment, diminished regard or concern for the future and increase in all forms of violence. Underlying the crisis in all its different forms is a persistent undervaluing of the human being.

Some of the facets of the malaise are caught sensitively by Heilbroner[27]:

> *"When men can generally acquiesce in, even relish, the destruction of their living contemporaries, when they can regard with indifference or irritation the fate of those who live in slums, rot in prison, or starve in lands that have meaning only insofar as they are vacation resorts, why should they be expected to take the painful actions needed to prevent the destruction of future generations whose faces they will never live to see? .... The question, then, is how we are to summon up the will to survive – not perhaps in the distant future, where survival will call on those deep sources of imagined human unity, but in the present and near-term future, while we still enjoy and struggle with the heritage of our personal liberties, our atomistic existences."*

Values are not a fixed body of conventions; indeed whenever they are treated as such, they decay. Values grow and deepen. In the history of human progress, certain periods stand out illuminated by flashes of insights of the sage, the seer, the prophet or the dedicated community, which have marked out new paths for the searching humanity. Such were the insights which gave to humanity the values of compassion, love of fellow human beings, justice, truth, awareness of higher good, virtue, beauty, self-realization. The insight of which a value is born is gnosis, moral wisdom. To use a term from modern psychology, it is divergent thinking, branching out and moving up to new levels of meaning. In the individual, a value conviction is a prompting to a higher commitment; in a society, it is a goal of collective consciousness. At the Symposium, a speaker[28] spoke about the individual as a "net giver":

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27 Robert L. Heilbroner, "**An Enquiry into The Human Prospect**" W. Norton & Co., New York. (1974)

28 SYM/M.A-1

"Man's greatest enemy is inside him, not outside. It is relatively easier for man to conquer the world than to conquer himself. A man comes in this world for a fixed period. During this period he gives something to the world and he also takes something from the world. If he gives more to the world than what he takes, he becomes a 'net giver'. If he takes more from the world than what he gives, he becomes a 'net itaker'."

The question of values is historically as well as in the contemporary setting of deep concern in Asia. It has its roots in religion, in culture and in the contemporary gropings and searches. A Symposiumist[29] dealt with the question in that perspective.

"Certain intrinsic values have been recognized by all cultures in Asia for hundreds of years past. Altruism, originating in the love and concern of one human being for another, has been respected as the highest human value, essential for the survival and further evolution of mankind. The Persian poet Saadi wrote as far back as the 12th century, in his classic **Gulistan**:

"All men are members of the same body
Created from one essence.
If fate brings suffering to one member
The others cannot stay at rest.
You who remain indifferent to the burden
of pain of others
Do not deserve to be called human."

Such humanism has been the common thread that runs through all religions and has been preached by ancient and recent thinkers as the only means for achieving unity in the

29 SYM/C.N-6

diversity of human cultures and conditions. Related to this value has been the search for 'truth' which is the core of science, of gaining knowledge. Knowledge has been extolled as a means for overcoming conflicts arising from ignorance. In one of the **Upanishads**, *the Guru advises his disciple who desires peace of mind, to take to the threefold path of (a) knowledge to end conflict with nature, (b) service to end conflict with other human beings, and (c) renunciation to end the internal conflict which goes on in the mind when many pleasures are greedily sought from life."*

This movement of the human spirit which found expression in the past in the insights of sages and seers has not run its course. In modern times it is more like streams of ideas and events merging into each other and defining a collective aspiration. Despite the cruelties and inhumanities that have scarred the present century – or perhaps out of its very agonies – new value affirmations have crystallized. Even if their roots go back in the past to a range of inspirations, it is in this century, notably in the present decade, that they are becoming moral tests of societal action – the value relating to human rights and the value relating to individual freedom, dignity and integrity. The values order differs from other orders – economic or political or organizational – in the fact that values and all affirmations thereof arise from and relate to the human being. This places education at the core of the values order, and values as the sustaining force in education. The crisis of values is also in a real sense an educational crisis brought about by trends which seek to empty the educational process of moral sensibility only to expose it to the negative values of indifference, cynicism, foul is fair and fair is foul. Social responsibility and social consciousness which underlie all lofty values can only be fostered through education in its broad meaning.

We bestride two "universes" of reality, each with its own dynamics of growth. One "universe" is the world of objects, externality. Science and technology operate in this external world. The truths of the external world are non-cumulative; a new discovery may wipe the slate clean of all that went before. Continuity in this kind of "universe" is fortuitous and certainly minimal. The other universe is pivoted on the human being, individual or group. Change in the interior "universe" of the human beingness is cumulative; it is expressed in culture, in the quest for knowledge, in the striving for heightened moral awareness. These two universes do exist in separation; but there are cross-over points. However, their pace and direction of movement are not the same. Mankind would be the poorer if it did not have one or the other. What should change and what has to continue and what continues even in change are issues of judgement and discernment. This is where education has a role to play that only education can perform.

Societies in the course of their development come to those critical junctures where they have to make choices. There are those who do not only wait to be swept into the future but wish to be active participants in the choosing and fashioning of the future. For such acts of choice it is indispensable to understand what is at stake in the choices.

The societies generally in the Asia-Pacific area are at the juncture where they have to envision for themselves the path of choice into the future, which does not have to traverse the wastelands of rootless modernism or, on the other hand, sterile and mindless efforts to duplicate the past. The best in the living traditions of the Asian cultures and world heritage, their moral loftiness, universality and the profound insights into human nature, may provide the links of continuity in the flux of developmental change.

Part Two

PROSPECTS

Chapter Three

ENVISIONING FUTURE EDUCATION

Integrative Education

Education is not a mere reflection of the social and economic forces at work in a society. It is also an important means of shaping the socio-economic and cultural forces and determining the direction of their growth. The dynamism of these other forces in turn affects the character of education. There is thus a circularity in the interrelation of education and a range of other human and societal factors. The consequences of education for society are mediated essentially through individuals affected by education and become deeper as the mediating agencies acquire collective possibilities over time. Thus education is in its profoundest essence an activity of the human spirit which can only be realized in a society of the future. Implicit in all forms of education except those which are mechanically ritualistic and repetitive are some integrative assumptions about the human personality, the nature of knowledge and human society. As education becomes consciously future-oriented, the question to ask is, what is the overarching vision that will draw education towards the future, helping to define the goals and to clear the paths towards them?

Throughout history and in all countries, thinkers, seers and men and women of vision have speculated on the educational

ideal, the overarching goal, by which human development is to be guided. The Asian cultural and philosophical traditions have a specially rich heritage of such elevated speculations and messages. Even though education has more often than not, and in all countries, developed or developing, failed to realize the ideal in actual practice, the drive towards it has now become even more urgent in the contemporary world.

At the Symposium, a speaker[30] addressed some of these issues specifically:

> *"The basic thinking behind present development models and education is that of expansionism-separatism. This thinking leads to the following:*
>
> - *Development means increase;*
> - *Economic development means growth, separated from human, environmental and social well-being;*
> - *Education is separated from other affairs, run by the Ministry of Education and the school system separated from community and social affairs;*
> - *Materials and mind are separated and development and education concentrate on materials;*
> - *Education is separated into subject matters; ethics is a subject, thus separated from other subjects."*
>
> *"The concept of continued growth as development is unrealistic. In reality all things are inter-related and have limits.*

30 SYM/P.W-9

The ancient wisdom perceived the **wholeness** *of things, while science tries to understand the pieces separately. The new thinking has to be INTEGRATION. Thus:*

- *Economic, human, environmental and social well-being are integrated;*
- *Materials and mind are integrated in development;*
- *Science and religious values are integrated;*
- *Education is integral in all developments;*
- *Ethics education is not a separate subject but integral in all affairs;*
- *Thus learning is development;*
- *The purpose of education and development is identical, i.e., to produce learning persons and a learning society."*

In reference to the concepts of "learning society" and "learning person", the same speaker recalled that:

"Lord Buddha preached, over 2500 years ago, the Noble Eightfold Path or Ways of Life, called **sikkha** *or learning. Life is learning. The Buddhist monks are called* **Sangha** *which means community or collectivity or society.* **Sangha** *is a learning community. The ideal society is a learning society."*[31]

The ideal of an integrated human being and society has persisted through the course of history, broadening from precedent to precedent. In education a new holism is emergent, based on the recognition that man is part of nature; that to know is to understand the relationship of one part to another and to the whole; and that the fulfillment of knowledge is in wisdom.

31 SYM/P.-9

Unified View of Education

The view of education centred on the human being is multi-dimensional with grades of significance. Along one dimension is the fundamental need for a balanced and all-round development of the human personality – intellectual, aesthetic, emotional, attitudinal and physical. This dimension has been familiarly emphasized in all "progressive" theories but possibly less successfully applied. Development along this dimension interfaces to levels of ontological significance. One is the level at which the human powers of the mind are realized – intellection, empathy, capabilities, skills of action. The other is the "internal" universe of man's being where the moral sense and valuing and the spiritual sense are brought to fruition. The educational environment fosters personal growth, experience of self-discovery and inner freedom. Intellectual discipline, sensitivity to beauty and enrichment of personal relationships are highly valued. The second dimension of a unified view is defined by man's place in the world in which he lives and has his being – the world of nature and of human society. The levels of significance in this dimension are twofold. At one level, man's relationship is one of knowledge and understanding. At another level, it deepens to engage a full range of human capacities. Thus knowledge and understanding of nature deepen to a sense of harmony with nature; an understanding of "global village" transmutes itself to a perception of oneness and interdependence. The study of human society is no longer limited to the study of objects but becomes a commitment to societal development, social responsibility, cultural participation and renewal, and human rights. The educational and societal goals merge in a vision of the learning society which serves the enrichment and fulfillment of all human beings in the fullness of their diversities, complexity and profundity.

The process of envisioning education is but to project into the future the unified image of human being in his and her

potentialities and possibilities. Such educational speculation into the future can help in realizing that future, provided that the change from what is to what needs to be is recognized for what it is – a basic qualitative change.

Educational Goals

Educational goals are part of the process of envisioning, serving in part as signposts of the development patterns and value trends underlying the present situation's movement towards the future, and in part anticipation of that future in an act of realizing it. They stem from the present realities and the societal consensus and at the same time go beyond them.

The future of education then may be viewed as a series of issues of choices to be made and educational goals as embodying the choices so made. Educational goals as determination of choices not only seek to affect or modify the present but also aim at shaping the future. In this time orientation, the process of developing educational goals is an important element of policy-making and planning and an equally significant means for implementing educational change.

Traditionally the effect of education is seen in an individual, its "product", the educated person. While this mediation continues to be important, it has acquired a more complex character in modern times. First there is the effect of "universalized" education reaching out to whole populations with progressively larger and broader bands of education for longer and longer duration. The "output" of education now is extensive and weighty enough to affect society with a degree of immediacy. This range of education is one of the significant aspects of what has been called the "knowledge-based society". The second development to note is that the institutional structure in which education now takes place has grown in size and complexity; it is an "educational complex" and is in its own right an important source of formative

influence on the total political, social, cultural and intellectual environment of society.

Educational goals have therefore to be envisioned as choices relative both to the social purposes and responsibility and to the individual empowerment and development. In many societies notably in Asia, there have been potent traditions of dominant societal purpose; also there are traditions equally strong in which the individual is regarded uniquely above the social group. Education for the future needs to be based on a higher synthesis, a new holism, of the needs of the individual and the societal responsibilities. In the process of reflecting on educational goals for a changing society, one must face the questions: what kind of future society is likely to be shaped by a particular type of education, and what characteristic of the individual will contribute to a desirable society?

There is in Asia-Pacific countries a growing consciousness, reflected in their socio-economic development endeavours, that education has a major role to play in accomplishing social goals, and alleviating perceived socio-economic problems of deprivation, poverty, and marginalization, and the social alienation that they breed. Social equity is thus an important educational goal in order to ensure to every person access to education of equal quality. This involves much more than enrolling the children from disadvantaged environments; it calls for the type of education and care that they need by reason of their deprivation. The educational goal relative to a social setting cannot be limited to that setting; it must also be seen in the specific context of the individual.

The educational goal has also to embody the cultivation and nurturing of social commitment without which the goal of social equity in educational action loses meaning. Just as education is a transforming force in intellectual development, so it has to be a force which nourishes and strengthens social commitment

expressed in caring for other people, specially the weak and the needy.

In the light of our recurrent theme that educational goals represent choices to be made, we may consider by way of illustration drawn mainly from the context of developing Asia-Pacific what is involved in the questions raised in a preceding paragraph, namely, what kind of education in what kind of society, and what kind of society in what kind of education?

Two Contrasting Models

The 'illustrations' are presented for pairs of opposite goals[32] (it being understood that as in all opposites, there are bound to be "grey" areas where the opposites merge on common ground).

Model A. Educational goal of promoting and nurturing the many-sidedness of the learner's personality – physical (including nutrition and health care), emotional, intellectual, social and ethical.

This would involve expanding the role and functions of educational institutions, e.g. schools, and extending educational facilities to include early childhood education.

Model O. As opposed to the above, the educational goal is limited to the "basics" of reading, writing and numeracy with four or five years of schooling to gain proficiency.

32 In the following paragraphs, the two contrasting models are indicated A, B, C. etc., and opposite as O.

This "minimalist" education[33] seeks educational effectiveness in doing less, imposing low expectations on the learners. The role and functions of the schools are kept down to the minimum and the broader care and nurturing functions may be assigned to other bodies.

Model B. Educational goal of providing an excellent education conceived in a broad and liberal framework which will be the foundation and the main corpus of formal education and designed to help the learner to lead a fulfilling life and to make a living. The general education so conceived will:

i) comprise in appropriate forms of integration, humanistic studies, scientific and technological knowledge and skills, socio-economic and developmental knowledge, and practical work-experiences;

ii) help the learners to understand and use the different ways of knowing which characterize human comprehension – the scientific, the intuitive, the aesthetic, the ethical;

iii) recognize and use to the fullest in the educating structures the diversity of educational paths which widen choices for the learners.

33 This minimalist educational thinking is specially in evidence in exhortations to which the developing countries are subjected in international gatherings. Here for example is a quotation from a document submitted to the World Conference on Education for All (Thailand, 5-9 March 1990) under the imprimatur of one of the sponsoring international organizations of the Conference:

"Although striving for universal primary education is a rational and worthy policy objective for the international community, it is clear that many countries will need to wait several more generations before achieving universal primary education of acceptable duration and quality ....Merely achieving universal access to one or two years of primary schooling by the turn of the century will constitute a remarkable outcome." (underlining added)

Model O. Educational goal is sharply focused on a selected range of subjects which need to be mastered in depth, with relatively early passage to specialization and consistent emphasis on outcomes. The goal so conceived involves:

i) focus on the intellectual capacity to the exclusion or marginalization of other aspects of learning;

ii) focus on skills and competences that serve to enhance the learner's competitive edge (e.g. enterprise competencies or enterprise "passport");

iii) focus on testing for selection and enhancing competitiveness;

iv) enhancing the education system's contribution to the economic system and judging of educational worthiness mainly by economic performance criteria.

Model C. The basic principle underlying the orientation of education to the future is that education and any system built around it must be centred on the human person. Only when this principle is treated as a major reference point for other educational goals as well as for selecting the means and objectives in the educational process can education and societal development be a harmonious relationship. The shift to person-centred education will mean:

i) giving high priority to nurturing and promoting creativity both in the personal and collective development of the learners;

ii) higher valuation being given to the learners' freedom to explore and inquire, to their developing awareness of self and identify, to their questioning, challenging and self-learning habits, to enhancing sensitivity, compassion, empathy;

iii) re-directing the institutional systems in education to creative approaches;

iv) strategic importance being given to the learning process as a person-to-person interaction – the teacher and the learner, the learner and other learners, the learner and the person of knowledge or wisdom in the community.

Model O. Consequential to "catching-up" cast of thinking and planning, education is seen almost exclusively in systemic terms as a technological model which is tested by economic returns criteria. Educational goals so conceived:

i) emphasize educational activities as instrumental in shaping behaviours, involving detailed pre-specification of desired behaviours to be imparted by controlled and guided teaching and training techniques;

ii) gives higher priority to machine-based technologies and man-machine interaction as teaching-learning resource, with special emphasis on accessing and absorbing specialized information;

iii) will emphasize business enterprise models for organizing education systems, with marked downgrading of schools in public support;

iv) will result in tendencies towards greater social divisions, notably of "knowledge-haves" controlling levers of economic power and others who would have been bypassed by the education system.

Model D. In envisaging education for the future, powerfully renewed emphasis will need to be given to social purpose and responsibility in defining in the contemporary context the role of education. The new role comprises the following dimensions though, it is not limited to them:

i) thoughtful and well-informed awareness of the social and development problems of contemporary society, such as population growth, environmental damage, poverty, racial and ideological conflicts, deepening disparities in qualities of life within the nation and internationally;

ii) enhanced sensitivity to the diversities of peoples and cultures and awareness of the enrichment that the diversities contribute to mankind's heritage;

iii) active participation in and commitment to social and community programmes.

Model O. The alternative model also stresses social responsibility. Marked differences however arise in the following areas:

i) Social problems are approached via reliance on technological solutions and institutional controls rather than educational action;

ii) Awareness of social problems is limited to nation or class dimension, relegating the transnational and international context to relative neglect.

The role of education for the future depends on these kinds of choices and on societal consensus. The choices may turn the future humanward, towards broadening freedom and development, or they may supersede man by his own creations.

Chapter Four

EDUCATING SYSTEM AS OPEN SYSTEM

Changing Education Systems

In common discourse the education system is in a general way equated with formal education and schooling. Education of course is not only schooling. There are a variety of non-formal ways of education, some embedded in the cultural milieu and some created institutionally. Then there are the informal ways of education, centred in the home, the family, the community. However, by far the largest segment of organized education is in the domain of the formal education system, comprising the schools, colleges, the administrative structures, the supporting services, etc. The crucial significance of the education system lies in the fact that future-oriented educational change indispensably involves corresponding change and redirection of the education system. The envisioning of new goals for education must also encompass transforming the system. Equally important is the recognition that a dynamic education system – that is, an *educative system* – is potentially a creative source of envisioning and a powerful instrument for realizing it. Dynamism lacking, it is all too often a limiting factor.

The education systems of the countries in the Asia-Pacific area vary widely in their structures, forms and scope, the differences corresponding generally with the levels of economic

and industrial development. In the developing countries, the formal education systems as they are to be found today were originally transplanted from the West and grew by almost completely supplanting the traditional education systems. The similarities among the education systems of the developing Asia-Pacific, covering such vast geographical area and varieties of conditions, are nonetheless striking. It is a moot point whether the transplant origin gives to the systems an enhanced capacity to bring about change or greater propensity to resist it.

There are four underlying trends which are exposing these education systems to new challenges:

- a rapidly growing enrolment explosion bringing into the educational process more and more people with greater differences in background, aptitude and interests, and more and more people staying on for longer and longer periods;
- a considerable expansion of the formal education systems, mostly uni-linear and replicative;
- tension and dysfuctionalities arising out of mismatch between the enrolment explosion and the purposes and goals to which the education systems work;
- education systems which tend to be crisis-driven rather than development-oriented.

In changing education for the future, the restructuring and reorientation of the education system is critically important. The system should have the capacity to nurture creative institutions which can most effectively do the educating. Much of the crisis in education at present, in developing as much as in developed countries, has its origin in institutions which, dominated by the system, are replicating rather than creating. An important way to lift the leaden weight of the system would be to displace it in many of its functions by networks of creative institutions with capacity

for collective response to the innovative challenges of future-oriented education.

At present, formal education centred around schools, colleges, etc., is the core of the education system. The boundaries that define, and separate it from the larger societal environment are clearly, and even rigidly, drawn. The evolution towards an "open system" will be marked by a twofold development. First, there will be increasing variety and diversification of the institutional structure at the core and development of new types of institutions serving a wider range of educational purposes. Indeed, this development is of such critical importance for catalytic change in the core system that it deserves to be treated as an indicator of the growth potential of an education system. The new institutional development will encompass educational R&D and innovation diffusion centres, policy-planning centres, new educational-training complexes, learning-communication centres, and networks of new and old institutions. The other aspect of the diversification will be the changes in the purposes and structures of the existing institutions and in the nature of the management regime.

The new goals of future-oriented education in terms of the domain of knowledge, the education-work linkage, and the extension of education to all people constituting the "learning force", will call for new orientations in the internal structures of the education system, notably:

- The duration of formal education will need to be extended. Early childhood education will become an integral part of the educational service, making basic education both a care and a learning stage of education.
- The continuation of education in appropriate and relevant forms to adults after they have passed out of the educational institutions will be an important

element of the system. New institutional forms will be developed for adults who need basic literacies, recognizing their special learning needs.

- The rigid sequential system of formal education with closely regimented progression from one stage to another will give way to open entry and re-entry and free movement between education and work.

Rigidity is possibly the single most glaring feature of the internal structures of the present formal education systems and may well be the prime barrier shutting out the movements of change in education. This is another fertile area for innovative thought and practice. The innovative strategy may aim at creating new institutions, programmes and methods in order to bypass the rigidities of the traditional formal system specially in the sub-systems which have wide influence on the whole system, for example, higher education.

The education system is a part of a wider societal environment in which educating activities take place. The oldest and the most notable of these educating activities are the traditional person-to-person networks through which the cultural-moral-aesthetic communications pervade a society. It is these communication forms which have served to maintain the vitality of popular art and cultural mores. Despite the inroads of drifting modernity, these traditionally educating activities are still operative in the developing world and offer important opportunities for interface with the educating formal system.

Apart from the traditional educating activities of the kind mentioned above, there are now an increasing range of programmes, generally for training and re-training of adults and out-of-school youth, community development activities, agricultural extension centres, small-scale industries development, community health centres and the pervasive T.V. and electronic

media. Most of these institutional developments are outside the formal system; some of them such as programmes of adult education and youth activities are in the periphery of the education system rather than at the core. This marginalized situation is quite dramatically illustrated in the programmes of adult literacy in the developing countries of Asia.

While the formal education systems will continue to expand with the impetus of enrolment explosions, the development activities outside the education system, that is the general societal environment, are likely to expand even more rapidly. The dividing lines between the formal education system and the activities and institutions in the general societal environment will shade off and make both systems open. The reciprocal impact of each will increase and become an important source of innovation. The educational institutions will develop new outreaches to their communities to respond to their development needs and the training. Cultural and other institutions will acquire an educational depth to serve the multifold human aspirations.

Crucial to the development of educative systems as open systems is the role of human agents in them. The formal education system's rigidities are invariably paralleled by the educational personnel – teachers and others – becoming educational coteries, access to which is only by certain limited paths of prescribed qualifications. The open educative system will be distinguished by the variety and forms of knowledge, experience, skills, social and cultural insights that it attracts through full-time, part-time or voluntary routes. The overarching goal of the whole system being focused on the human being and human needs, the educational personnel and not educational technology will be the energizing force of the system. A system that has a place for futuristic games but no place for a sage or a seer would indeed be a poor thing as a human system.

Chapter Five

KNOWLEDGE-BASE OF EDUCATION

Knowledge Environment

If there is anything one can predict with certainty about the future, it is that more than now, or ever in the past, the societies will be knowledge-dominant. How much of that dominance is in the service of human society is in itself a function of that knowledge – what its nature is conceived to be and how it is transmitted and used. Education is one of the sources – though not the only one – of the growth of knowledge; it is now possibly the most important means of transmitting knowledge in organized and systematic forms.

This emerging future would call for the command of knowledge and skills of increasing complexity. The role of education can no longer be limited to transmitting a fixed body of knowledge. It has to extend to a leading role in defining what knowledge is most worth and the uses thereof in the context of human strivings and aspirations. For that kind of role, education itself may need to be knowledge-oriented in a more comprehensive manner than at present and develop the skills and capacities to respond to the emerging future.

Who are the beneficiaries and participants in the emerging knowledge-dominated world? This is a crucial question.

Knowledge is power, says well-established old wisdom. As knowledge and skills become complex, there is an inherent tendency for power to concentrate in the hands of the new merchants of knowledge, the specialists, the knowledge workers. This new divide between the people and the knowledge workers will be sharper and deeper than any divide created by wealth and economic privilege. It is then an important function of future-oriented education that knowledge should be widely diffused in the people in order to create understanding of, and a degree of participation in, the use and direction of the knowledge as power. This is no less than the creation of a knowledge environment, or ethos, for education, indeed for all human empowering activities. Just as education can no longer be conceived only as transmission of the past, so it can no longer be limited to a few, by a few, for a few. "Education for All" is indispensable for realizing and coping with the knowledge-based society.

As discussed in the previous chapter, there are many forms and modes of education. However, the formal education embodying organized and systemized knowledge and skills has come to have a central place in the education complex. We are suggesting later in this chapter that non-formal and other modes of education will have an important, possibly major, role in the knowledge environment of the future. However, given the central role of the formal education, any change and transformation of education must be focused in the main on the formal system.

Qualitative Transformation — Key Priority

The essential, indeed key, concept in changing education for the future is its qualitative transformation. This applies in one form or another to all countries and with special relevance and immediacy to developing Asia-Pacific. Much of the educational development in the region has been (given a variety of constraints), a follow-the-numbers progression tempered with oc-

casional reforms of the structures and in a limited way institutional development. A qualitative transformation for future-oriented education involves no less than a "double leap" in order to move ahead in the quantitative dimension and simultaneously set in motion the process of qualitative change. In the final analysis, the impact of qualitative change of education on general societal development is so much more profound precisely because of the numbers who are able to magnify the impact.

The urgent need to activate the process of qualitative change is underlined by the widening gap between what the formal education does in terms of its goals, its content and process and, on the other hand, the new horizons of knowledge and of life that are defining the prospects of the present as well as of the future. While it would be an over-simplification to suggest that educational change can be determined in a precise way so as to "fit" education at any moment to the needs of a future society, there are discernible trends and growth points in the light of which some salient features of desirable changes in education can be posited, notably what comprises the concept of qualitative transformation in particular societies.

Qualitative change in education is a multi-faceted phenomenon. One key aspect is the breadth of learning encompassed, the need of the learners for exposure not only to a broader range of disciplines but to new generative synthesis and to new areas of inquiry. The approach is not one of superficial "contact", but in some depth in terms of the insights that are acquired. Breadth and depth – these make it possible to draw on the various disciplines and cross-disciplinary and interdisciplinary approaches for coherent and effective learning and to lay the foundations of capabilities for new learning so essential in the work places as well as the expanding knowledge environment of the future.

Broad-based Learning

In broad-based learning the emphasis shifts from a purely cognitive to an all-round intellectual, physical, emotional, social and moral development of the learners. In the framework of the common educational structure, the principle of broad-based learning will translate at the first level of education as learning for caring, for personal physical and health development, and for acquisition of basic learning skills by all children.[34] These basic skills, and cultivation of enquiring, questioning, exploring attitudes lay the groundwork for further learning, independent learning and learning to learn.

Advocacies of "back to basics" and "basic education" limited to just a few essential skills of reading, writing and numeracy have been targeting the developing countries so stridently that they have become a major source of educational misinformation and distortion. This "minimalist" education approach which at the basic level of education relegates learners to a regimented diet asserts itself at the post-basic levels in limiting the range of "necessary" knowledge to ensure depth. These narrow approaches have tended to make learning sterile without raising the educational performance levels to which they were addressed.

At the post-basic stage, broad-based learning is maintained in appropriate forms and specialization comes later rather than prematurely. At the post-basic stages the organization of broad-based learning is guided by the principle that the streams of knowing and development continue together and are not to be

34 World Declaration on Education for All adopted by World Conference on Education for All (1990, Jomtien, Thailand) showed the way to a broader approach to basic education. It declared:
"Learning does not take place in isolation. Societies, therefore, must ensure that all learners receive the nutrition, health care, the general physical and emotional support they need in order to participate actively in and benefit from their education."

prematurely separated; namely, the way of knowing of humanities and creative expression is not separated from the way of knowing of the scientific-technological; and these again are not separated from the way of knowing and action embodied in social-economic knowledge. Interwoven in these domains of knowledge and applications are values and personal development and commitment.

While the developments in science and related disciplines dramatically represent the knowledge-explosion, to the extent at times of overshadowing other areas of knowledge, the human sciences and language have the potential of a very high order for changing and redirecting education. The educational roots run deep in the human consciousness, including and extending beyond the cognitive to the intuitive and the creative. Language is the principal means of creative expression for a child as much as for an adult. The ability to communicate effectively orally and in writing will continue to distinguish an educated person and just no amount of technology by itself is likely to redeem a person's illiteracy.[35] Language is also the principal communicating link among the different disciplines, including the scientific. Over and above, language as literature embodies the human visions of greatness. The study of foreign languages will be an important source of curricular enrichment. These influences, combined with others which have their sources in the broadening horizons of the interdependent world, should make the area of humanities and social sciences the most fertile ground for curricular change in the next decades.

35 The Beijing Round Table made the amazing claim that "because of advances in educational technology, it is now possible to be a lifelong learner even if one is illiterate." (Final Report, November-December 1989)

World Context in Education

The mental horizons of formal education functions contrast strangely with those which the emerging One World is unfolding. It is doubtful if the amount of knowledge of the outside world purveyed by the education system in any country, developed or developing, is appreciably more than what was known, say, at the time of Galileo.

It is fairly certain that if the next generations do not know and understand the world much better than the present generation and its leaders and opinion-makers, their survival chances will be in grave jeopardy. The locus of human co-operation for mutual enrichment as well as survival is moving from the national to the world level.

The responsive educational change has to be along two lines. First, the world context should receive greater emphasis in all school subjects from the very beginning, such as in geography, or economics/demography or political science. A foreign language taught for adequate competence in speaking, reading and writing should be a required subject. At the post-secondary level, universities and other higher education institutions should provide competent facilities for learning/teaching foreign languages so that there may be adequate cadres with proficiency in different foreign languages.

The other important line of educational action is to introduce the study of world history and cultures at the secondary level. This is not presented as a chronicle of dates and events, but rather in terms of the great movements of human affairs. For example, one possible approach is to present the history around three themes: cultures and civilizations in different periods and different geographical areas; the emergence of great ideas and values which have shaped or changed mankind's course; and the different expressions of human spirit in art and aesthetics. The

basic principle is that all human achievements are a common heritage of mankind to be shared and participated in by each generation.

A study of world history introduces the young people to the variety and plurality of human achievements at the different levels of technical skills and social organization. The purpose of such study is to develop the insights and perceptions of empathy – the kinds of insights that come into play when we see a human face in compassion, an artistic creation, or a landscape of surpassing beauty. It helps to show the inter-relationships in human organization and problem solving. Most important, the students are exposed to the dawning and progress of the great moral ideas which have so profoundly changed the world. This is also valid in the aesthetic domain. Other styles, expressions and rhythms open new doors of perception. They sensitize one to one's own art forms and help to respond with deeper appreciation. The minds which have opened to the diversities and pluralism of different peoples, their ways of life, their human and spiritual aspirations will view with greater and deeper understanding the diversities in their own social and cultural situations.

The cultural traditions of Asia have contributed so richly and magnificently to the common world heritage. Perhaps it is ironic to reflect that few of the modern education systems in Asian countries provide to the young people any bridges of knowledge and understanding to the common Asian heritage.

Science and Technology Education

The societies of the twenty-first century will, quite clearly, continue to be shaped by science and technology; quite as importantly, science and technology are indispensable in helping the societies from where they are now to where they aspire to be in the next century. Questions about what kind of science and

technology and for whom, are central to a qualitative transformation of education.

Science education, in one form or another, has now a recognized place in school education in Asia-Pacific countries. There are, however, a variety of shortfalls in developing Asia which should compel a major reorienting effort in this area. First, much of science education in the schools is designed as a preparation for the study of science at the higher, specialist levels. It is thus narrowly based, both in terms of the range of learners it serves and of the kind of the learning experience of science it offers. Secondly, science education programmes split off prematurely the science disciplines into specialized groups. Thus the biological sciences are split off from the physical sciences and both from environmental science. Thirdly, the links of science and technology in science education programmes are too tenuous and weak.

Science and technology education has to be broad-based and accessible to all students at all stages in an appropriate form. It has also to be a significant element in adult and continuing education.

Life-sciences and natural sciences need to be presented in a common framework which should also include the new growth points in biology, in cybernetics and computer science and in organic compounds. The most important of the redirections is the integration of technology and science. The integration of theoretical knowledge and its application with the associated skills is at the heart of a qualitative change of science education at the schooling stages. This integrated body of knowledge including computer science applications and associated skills should make it possible for all pupils to gain an understanding of the nature of technology and prepare them to use science and technological skills in the problems of daily life as much as in further learning or entry into the world of work. Technology is not just

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tools; it is about how one works and lives and perceives the world. The aim therefore is not narrowly focused on any specific skills, but on nourishing insights and styles of work on which later learning or occupational training can build. Appreciation is also developed of the fact that the sources of new knowledge lie in application as well as in theory.

The history of the growth of science and technology exemplifies the human pursuit of great ideas in which different societies have participated. Scientists and inventors represent an aspect of creativity in their work, which bears directly on the objectives and methods of science-technology education as well as of general education.

Another area of integration is the linking of science-technology and environmental science which should nourish in the young people a caring understanding of the interdependence of all living things and of the delicate life-sustaining balances which hold the living and the inorganic together.

Science and technology education is not only about bits or systems of knowledge. It is how that knowledge is garnered and tested and made the subject of educational awareness. The contents and the process are treated as a continuum. A speaker[36] at the Symposium made the point in the following words:

> *"Science education must shift from the memorizing of science contents to the scientific process. The process of observation, recording the observation, analysis, synthesis, conceptualization, hypothesis formulation, inquiring, critical searching and using of information, acquiring new knowledge and application of knowledge must be used for intellectual development. Education and research are continuous processes of learning. Research behaviour and*

36 SYM/P.W-9

capability must be established at every level of education. Education associated with research will help the learners and the system to be in contact with realities which change with places and times. The education system today, in spite of its widespread infrastructure, almost does not generate knowledge, for the system emphasizes only transmitting subject matter. If the scientific process is introduced into education and research is incorporated into learning and learning is applied to the real environment around the education system, knowledge will be generated all over for appropriate uses."

Essential in the educational method of science and technology is sharpening and enhancing the ability to identify and define a problem[37] and use knowledge and skills effectively towards a solution. The fostering of inquiring, questioning and critical attitudes is the essential outcome of the educational process across all learning domains and notably so in science-technology education. The learners' role in these processes is an active one and is critically important. Problem-identification and problem-solving would be a poor transaction if the problem is handed out to the learner rather than being identified by him or her.

Economic, Social and Development Domains

Another knowledge domain important for qualitative change in education comprises the "development-oriented"[38] disciplines, notably economic-social. Considering the influence which the economic activities command even in the least complex

37 Einstein wrote of problem formulation in science:
"The formulation of a problem is often more essential than its solution, which may be merely a matter of mathematical or experimental skill. To raise new questions, new possibilities, to regard old questions from a new angle, requires imagination, and marks real advance in science."

38 The reference to "development-oriented" covers in a general way the process of development planning through which the national economies are sought to be transformed.

developing countries and on the social and personal environment, it is surprising, to put it mildly, that economic studies at the schooling stage are either not provided at all or are weakly developed. In economic studies, as in science-technology, theoretical knowledge needs to be combined in appropriate ways with the applied forms and with skills of enterprise management. The study of population dynamics and its consequences nationally and internationally, and of natural resources and their use are closely linked to the economic-social area.

Issues of linking education and work also need to be considered in the context of development-oriented disciplines. In all the foregoing reflections on educational goals, a constant theme has centred on the integration of knowledge as theory and knowledge as practice, of understanding and skills. Practical and technological work should lead to development of generic skills which are useful and indispensable at the work places in self-generated or self-employment jobs and which are equally essential as the foundation for more specific occupational training. Such generic skills would include work discipline, planning, quality awareness, and co-operation with others. It is envisaged that the general education schools and the vocational and technical schools will interface closely. The education for the work place in the coming decade will need to be broadly based in terms of the range of abilities that a learner can have, not only cognitive but also manual, technological, inter-personal. As the general schools draw more on work experience as a learning resource and the vocational training schools develop a broader academic basis, the distinction between the two types will become less sharp and not inconceivably, vocational/technical schools may become the common schools of the next century.

An important avenue for a two-way flow of experience between education and work is provided by arrangements for the students' participation in work-experience programmes, com-

munity services, social development programmes. Some countries have introduced such programmes and they are bound to grow and diversify in the coming decades.

One of the most significant developments in the next few decades will arise in the area of adult education. In the developing countries, as the learning force grows and the work-place environment receives the impact of rapid economic, social and cultural changes, the demand for re-education and continuing education for the adults will grow sharply. The increasing importance of adult education and continuing education will bring into schools and higher education institutions new and "hands-on" work experiences which can profoundly influence the learning environment of educational institutions.

Information Technologies for Education

References to continuing education or recurrent education call to mind one of the most successful innovations in education, namely, distance teaching (or as some would prefer, distance learning), and associate it with the application of educational technology.

Educational/instructional technology (or "informatics" for some) has attracted reactions which range from dawn-of-a-new-day claims to outright rejection. In the 1970s extravagant claims were made about the performance of programmed instruction, computer-assisted teaching machines and the use of the electronic devices in the classrooms. They were for a time promoted as specially relevant to the needs of the developing countries to make up for the lack of qualified teachers. It was not long before the claims and expectations had to be muted in face of disappointing results. Now with the new generation of technological developments in information and micro-technologies and the far-reaching impact they have created on every aspect of modern life, one cannot fail to notice in relation to education a

fresh re-kindling of the high expectations for re-fashioning education through technology and at the other end, an attitude of even greater caution.

Those who hitch their educational vision to high technology do so partly because of a belief that what has "worked" with such visible effectiveness in industry, business, entertainment and weapons systems should also work in education to change it. There is also a more general perception that what is based on human interaction is of a lesser order than what comes of machine – machine or machine – man interaction. The new technology, as its precedent of 1960s-1970s, is an outgrowth of the technology of information processing, and has not emerged from any developments or knowledge about how people learn and what human learning is all about.

Thus the new technology is hailed as a 'learning rather than a teaching technology'; in its computer form, it will replace the printed book and bring more information and more flexibility in use; as television, it will create a whole new world of visual pedagogy in which what matters is not subject matter but 'the skill, professionalism and persuasive power of the presentation'[39]; the technology will individualize learning pace and process and so forth.

The discussion in the Beijing Symposium series[40] is revealing of the two reactions to educational technology. The Round Table expressed the following view (part of it was quoted earlier):

> *"Educational technology is providing new opportunities for high quality interactive learner-driven learning. We can*

39 Even such a wise thinker as Peter F. Drucker is swept off his feet by the technological vision when he declares, **"There are more hours of pedagogy in one thirty-second commercial than most teachers can pack into a month of teaching."**

40 International Symposium and Round Table, (**Final Report**, November-December 1989, UNESCO)

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expect this to increase dramatically in the 1990s. Indeed, because of advances in educational technology, it is now possible to be a lifelong learner even if one is illiterate."

The Symposium (Beijing), ignoring theoretical considerations, took a pragmatic line on grounds of the developing countries' constraints. It said[41]:

"New developments in information technology, including computer-aided learning, interactive video, video and television, offer important opportunities to improve the quality of learning for many students. Developments in this area, however, require a large investment of effort and finance. In many developing countries the reality is that only a few elite schools would have such technology, thus aggravating the equity problem in developing countries."

In a similar vein of caution inspired by cost-consciousness (and not any inherently educational principle) the World Conference on Education for All offered the following[42]:

"The quality and delivery of basic education can be enhanced through the judicious use of instructional technologies .... The definition of a suitable technology varies by societal characteristics and will change rapidly over time as new technologies (educational radio and television, computers, and various audio-visual instructional devices) become less expensive and more adaptable to a range of environments."

Much of the uncertainty surrounding educational technologies arises from a special kind of "demonstration effect". It

41 "Learning to Care : Education for the Twenty-First Century. (**Report of the Symposium**, Beijing, November-December 1989. UNESCO)

42 World Conference on Education for All : Meeting Basic Learning Needs (**Final Report, Framework for Action**, Jomtien, Thailand, March 1990)

is all too clear that information and micro-technologies have, now and in the future, an increasing impact on various aspects of contemporary life. Their influence is spreading out globally faster than any other influence. By a "demonstration effect" it is assumed that these technologies will breed their educational variants. The implications for education need to be understood in terms of the various aspects of these technologies rather than assuming a single entity as educational technology.

Clearly information and micro-technologies represent important developments in the scientific domain and should be a part of science-technology education of all students. Computing skills are rapidly becoming as necessary as other useful skills. Also, as a part of science-technological education, understanding should be promoted of the enormous potential of these new technologies and how they are operated. The educational institutions will also be engaged in training people for the increasing range of enterprises in which computer-based technologies, etc. are used in the developing countries. The use of these technologies in enterprise management is already well under way in developing Asia and is bound to increase. There is some scope and need for the use of suitable information technologies in the overall management of the education systems. These are what the technologies can do best.

The basic question, so far as education is concerned, is whether these new technologies are on the way to changing fundamentally, or displacing, our models of knowledge, learning and teaching.

These technologies are, as their source name indicates, basically concerned with information. Their power, which is estimated to be doubling every two years, is computing power and it is in the application and variation of the computing power that lie implicitly the particular models of learning and knowledge and teaching that the technologies purvey. Information is not

knowledge, far less is it wisdom. The "technological model" of learning is one of severely limited range, scope and depth but great power. Its aim is effectiveness and not the divergent qualities of thought such as creativity, valuing, discernment. Learning as interaction of person-to-person and person-to-ideas is replaced by learning as the combination of man and machine.

The distortions of the "technological model" arise from its tendency to downgrade the educational process to its specific limitations. Thus education will become a matter of achieving measurable outcomes by paced and programmed steps. The teacher need no longer be a role model, a motivator, for the learner, a partner in a dialogue. He becomes at best a monitor, otherwise a part of the technology.

Human learning that is characterized by enquiry, questioning, diverging, synthesizing and by timeless questions is not "computer-friendly". Information technologies are in their operation so reliable because they are so utterly predictable. There is no flagging of patience and no variation. But an apple falling? They can tell you about the million apples falling. But there will be no flash of inspiration to tie in that single falling apple to the galaxy and the planets. They can give answers but cannot form the questions. What Plato said of another technology of his day applies with even greater appropriateness to our educational technologies:

> *"You might think they spoke as though they made sense, but if you ask them anything about what they are saying, if you wish an explanation, they go on telling you the same thing, over and over forever."* **(Phaedrus)**

Can anything other than the human mind ask the question, why is there something rather than nothing? The ability to form a question is what learning and knowledge and teaching are about. And so far it is the humans who do it best.

Chapter Six

KNOWING-LEARNING-TEACHING : THE PROCESS

The central theme of the arguments in the preceding sections is the need for a unified holistic view of future-oriented education. One aspect of the unified view encompasses the content or what is taught, the process of how the content becomes a learning experience and the abilities, skills and insights which are formed and nourished by the whole process. It is important to recognize that when a significant change occurs in any one element in education, it affects the whole educational environment including the teaching-learning process, institutional organizations and the basic framework of beliefs and value assumptions. Many a path of educational reform has ended as a blind alley because of exclusive concentration on any one aspect to the neglect of the complex whole of relationships.

What ultimate end does this complex of processes serve? Who is it designed to benefit? By what aims is it to be judged?

Learner-driven Learning

At the heart of the learning complex is the individual, the learner, in his and her unique individuality. In the transmitting of knowledge and its learning, the teaching of a subject or skill and

its acquisition – the individual learner is both the subject and end purpose of the process. Whether the learner is at the centre or at the periphery is the defining characteristic that distinguishes one educating system from another. It also determines the ethos and values of the educating system as a whole and its constituent elements, whether they are scaled to human purposes and needs or are dehumanizing by their size, work methods and anonymous character. The recognition of the learner as an active, indeed driving, force in the knowledge-learning process and the self-realization of his/her range of potentialities in that process is a crucial fulcrum for reorienting education.

Learning and Creativity

Another cardinal goal of the knowledge-learning processes as well as of the educating system is that of developing creativity. This goal is not only closely linked to but directly flows from the shift to the learner-centred/learner-driven education processes. Creativity is the potential that every learner carries within himself/herself, waiting to find expression. Psychologist Jerome Bruner's dictum that "any subject can be taught to anybody at any age in some form that is honest" applies with even greater force to the goal of creativity. It subsists through different stages of growth of the learner's personality, from childhood on to adolescence and maturity. It finds expression through different powers of human personality, ranging from instinctual curiosity and self-expression of childhood, to self-awareness, self-esteem, innovation, and the qualities of heightened perception and sensibility[43]. The pursuit of creativity in teaching and learning helps to bring the knowing-learning process to its rightful base, that is,

43 An ancient Indian text says:

"Where there is joy, there is creation;
Where there is no joy, there is no creation"
(CHANDYOG UPANISHAD)

within the human being. Learning is what the learner does and cannot be done any other way.

Creative Methods

Given the "matrix" of learner-at-centre and creativity-as-goal, certain approaches and methods need to be highlighted.

- The learners should be active participants in the knowing-learning-teaching process. The degree to which the student is so engaged and involved and committed is the real test of teaching and of the learning environment. Teaching that is only transmission of fixed body of knowledge (whether by a teacher or by high-tech devices) is sterile and makes the students passive learners by rote. That is what the tests, designed and controlled remotely, measure. Active and participatory learning-teaching shows itself in enhanced ability to think and act independently and creatively. The development of curiosity and of the questioning attitudes, and of a will and capacity to choose an action and make a commitment, are important elements of participatory education. It is relatively easy (and of course important) to introduce new technologies and even easier to bring about literacy or "reading comprehension". It is much more difficult, yet much more important, to bring about the changes in attitudes and habits of mind, for to bring them about involves reducing the gap in attitudes between the teacher and the learner.
- The knowing-learning process should be presented in contexts in which there is constant interplay of thought and action, theory and application. Knowledge is *doing*

no less than it is apprehension of abstract ideas. It is mind transformed to tasks. The interweaving of theory and application promotes the essential ability to adapt knowledge to different situations and to evolve or adopt creative approaches to problem solving.

- Knowledge, as it is presented in the education systems, is highly fragmented into ever smaller segments of disciplines. This tendency has been reinforced by sterile tests and measurements of the evaluation procedures. The methods of teaching which treat knowing-learning as an integrated process constantly relate the particular to the general and the general to a specific expression, and build interdisciplinary and cross-disciplinary links. The linkage is equally important with the other domains of knowledge, notably values, and real life-problems at all levels from local to global.
- The ways of knowing are various. The limiting of education action to one style only, for example ratiocinative, has tended to impoverish the knowing-learning process. The methods should bring into play, in appropriate forms, other ways of knowing such as the intellectual, the intuitive, the empathetic the practical, and the transcendental. The sources of knowing-learning are also various and the methods should constantly expose the students to sources other than the formally organized institutions; namely, learning from fellow learners, from the community, from work sites and importantly from active engagement in social action.
- The central principle governing the methods and models of teaching is that different learners learn different domains of knowledge differently. How to

"individualize" the knowing-learning process so that the individual's potential is developed fully, is at the heart of the educational challenge. The "factory model" of school organization, the pressure of graded testing, the homogenization imposed by the curriculum procedures based on behaviourally defined outcomes – all these factors and others have tended to subvert the central principle of individualized learning. Person-to-person learning, learning in small groups, small schools down-sized to human learning needs rather than large, monumental ones designed for "containing" pupils – measures such as these are needed to re-claim the commons of human learning. This is a critical area for innovation and creative educational initiatives.

The Teacher

The teacher's role is crucial in the knowing-learning-teaching process and specially in reorienting education. Time and again the success of educational reforms has been found to be decisively dependent on the "will-to-change" as much as the quality of the teachers. No education system can rise too far beyond the level of the teachers in it. Educational initiative which has its roots in the commitment of the teaching force has not only prospect of success but also of constancy. Such change, like any human-based change, may appear to be slow, but its rate of obsolescence is also very low, compared to machine-based changes. The successful technologies have been precisely those (e.g. distance education) which have used the skills and styles of best teachers.

In the learner-centred knowing-learning process, the teacher is not only a transmitter of discrete segments of knowledge. The teacher helps constantly to connect to the larger

framework. He or she is also the learners' guide, counsellor, role model. The teacher is thus not a narrow specialist but a knowledge-worker, a lifelong learner. In the perfection of the teaching process, the teacher and the learner are partners, enquiring and exploring together. This is the relationship which in some of the Asian traditions is symbolized by the word guru. Aristotle referred to it as "a moral type of friendship" and St. Thomas Aquinas called this kind of teaching "an act of love and mercy".

Towards the Learning Society

In the ultimate analysis, the ideas centred on lifelong learning form the core of future-oriented education. What distinguishes these ideas in the contemporary discourse from their earlier exposition is the belief that lifelong learning is not only for the exceptional individuals; it pertains to all learners and to the society as a whole. It is basic to the evolution of new structures and diversified paths for learning.

Learning to learn, continuing to learn and lifelong learning are all linked. Basic to the process is learning to learn which sums up the educational purpose and goal of learning and teaching, from the very first stages on. It is in learning, in the handling of knowledge and application, that the desire to learn is activated and from which the capacity to learn independently is constructed. The important point to make is that the motivation and the ability for continuing learning are realized in the style and habit of learning that are nourished in the learner.

As human capacities begin to dominate the development process, training at work, or change of work or creating new work will be very widespread. Its extent and range will be an important indicator of a society's development. Furthermore, education and training will lose the sharp distinction separating the two; training

centres will also be education centres, and all educational activities will also be training activities.

Similarly the artificial distinction between formal education and non-formal education will cease to have the undertones of two separate and different educational worlds. On the human landscape, formal and non-formal education, home and community education, and all other expressions of the educational quest are like the waterways of a mighty river, flowing into and out of, receiving and giving. In the waterways are some deep channels which harbour living organisms and maintain the intricate balance between the mighty river and its waterways. In all societies, and the Asian societies are specially blessed in this regard, there are channels of lifelong education embedded deep in the cultures of the societies. These deep-seated channels of lifelong and life-sustaining education can be bypassed only at great loss.

With the increasing role of knowledge-related skills, the new as well as the existing learning resources in society are coming innovatively into play. Knowledge networks are emerging as the new educational structures. Networks are mechanisms of co-operation for sharing information and expertise, exchanging and even creating new skills and knowledge. Educational institutions not only network for their mutual benefit, but also for providing services to the community or other institutions for back-up support.

Equally important are networks of persons coming together around common interests – networks of fellow workers, of knowledge personnel, of learning groups. Group learning, that is, the ability to learn as a group, will be one of the important support systems of the emerging educational structures.

The perfection of learning is sharing; the more one learns, the greater the desire to share. In the Asian cultural traditions, the sharing of knowledge, wisdom, learning is the prime responsibility of the elder man, of anyone who has received the gift of knowledge, of anyone who has mastered an art or a skill, of the wise man, of the sage. Learning to learn should surely prepare for learning to share.

Chapter Seven

VALUES: THE CENTRE THAT HOLDS

In Chapter Two we discussed the general crisis in human values. That crisis reflects also a crisis in education.

There is a growing gap between the world that the economic and technological forces are creating, and the realm of values. Increasingly the objectives of "effectiveness", "efficiency", "getting the results" are looked upon as their own justification for pursuing them. Increasingly, private benefits carry much greater weight than public good. There is increasingly a "secession" of the wealthy from the collective responsibility of society and a deepening failure of understanding between the rich and the poor.

Education systems all over present themselves as confused, even in disorder, in responding to the learners in values development. Education is not and cannot be value free. Increasingly it is treated as if it is. The perception of a future education is implicitly a view of the moral order of the future. Values are the doors of perception through which we look at the world and ourselves and interpret the experience and make it intelligible to ourselves. To shut these doors on the learners on grounds of "detached view" or "moral neutrality" or "irrelevance of values in the preparation for earning a living" is arguing for education without purpose. Education that is infused with a constant sense

of values should mean deeper *moral sensibility* and greater *human understanding* so that the learners, as they have more education, can more clearly see the barriers that divide and can more clearly hear the cries of suffering and loneliness.

There have been in the educational discourse broadly three different approaches to incorporating the dimension of values in educational programmes. One approach is based on a construct of an "ideal" or "model" person exemplifying the desirable habits and attributes (and generally presented in national or ideological terms). The desirable traits are to be cultivated in the schools. This approach was at one time, not too long ago, the hallmark of several education systems. It gives little to a sense of freedom in personal development and is found to be associated, all too facilely, with particular types of political systems.

Another approach is based on the identification of values with the desirable abilities and skills which the instructional processes should aim to develop. Thus critical thinking, reasoning and problem solving abilities, learning to be enterprising, abilities to work co-operatively, and to work in an organization, initiative, etc. (the list can be expanded indefinitely) are abilities through which values are realized. There is no automatic transfer of the abilities and skills garnered in a subject-area to another subject-area or to the learner's development of insights. Much as the abilities and skills contribute to the formation of values, there is more to values than skills and abilities.

There is yet another approach, which is based on two basic premises. First, values are more than abilities and skills, as knowing what to do is different from know-how. To what ends and in what way abilities and skills are exercised, defines the realm of values. Values call for a commitment of the whole personality and are for that reason qualities intrinsic to what we do and how we do it. In education, values are thus seen as a part of the processes

of knowing and learning, and at the same time as something to be addressed directly in their own terms. Secondly, there are levels of significance in the realm of values, and these are reflected in the steps in which the learners are exposed to them. In the light of this, one may think of values in terms of (i) personal context; (ii) social context; for example:

Personal: Integrity; caring and compassion; authenticity; sensitivity to human individuality and to life in all its forms; sensitivity to human rights; self-understanding; self-restraint;

Social: Sense of responsibility; understanding and tolerance of difference and pluralism; co-operative; concern for public good; non-exploitive.

In terms of the levels of significance, the discernment of values must ultimately rise to a moral vision which would enfold knowledge, beauty, truth, virtue, harmony, love, justice, freedom.[44]

The adolescent years are crucial in forming in the young minds the impressions and images of values, positively or negatively. A high proportion of these young years are now spent in school, and clearly the schools have a responsibility and should have a commitment.

Education in values begins at home and is shaped by the parental values. The school's responsibility is a partnership with the home but progressively in line with the development of the child, the school's participation takes on a more divergent form. In the early years, the "values" are centred on formation of habits

44 The International Round Table addressed many aspects of **caring** as a keynote value for future education.
Learning to Care : Education for the Twenty-first Century : **Report of the Round Table** (Beijing November-December 1989, UNESCO)

and manners and the basics, as it were, of co-operation, self-restraint, consideration of others, etc. With the growing self-awareness of the child, the "basic code" begins to undergo a process of internalizing. In the next phase of development, the notions of "right" and "wrong" with reference to one's own actions or other people's actions begin to emerge. Correspondingly, the reasons and explanations of the basic code are sought more consciously. These two phases complete an important cycle in the values education in terms of the socially and culturally-directed norms of personal behaviour.

The next stage, though it builds on the earlier one, is qualitatively different. The stage is marked by a high degree of awareness in the young person and of doubts, and questionings, of a search, possibly unaware of itself, of meaning and purpose. It is the stage of a growing sense of personal autonomy. This is the stage at which education with a commitment to values has to participate in the young person's development, directing the questionings to the personal relations and motives and to social responsibilities. The educational commitment is not directed to "implanting" any set of values. Its main purpose is to develop in the young minds a moral sensibility and discernment, and to help them to deepen their insights so that they may develop for themselves a body of convictions and guiding beliefs. Philosopher Kant said that the proof of an ultimate reality is the "starry heavens above and the moral sense within". That "sense within" is what the values education is about.

To that end the young people should be exposed to the great ideas and great expression of values which have lifted humanity to the high ranges of the spirit – ideas of human dignity and freedom, of individuality and social responsibility, of kindness and compassion.

The "teaching" of moral values in the context of great ideas will not be "instructional"; it can only be dialogic, the

conversation between the teacher and the taught and the ideas. Only by dialogic method can the ideas be internalized and made as their own by the young learners, and by that means to make their own lives less unintelligible and more meaningful. This is the learning that "makes the soul of the learner capable of defending itself".

The contemporary world is face to face with a rising tide of dehumanizing forces. This affects the young with particular severity, creating a deepening sense of atrophy, of a void. The intellectual accomplishments and the mastery of skills seem to lose their lustre. Education which narrowly addresses only the material has much to answer for this erosive tendency. The primal aim of education as "all-round development" so narrow-mindedly downgraded by the "planners" and their kind has to be revisioned if education is to play its full role in the complex world of tomorrow.

Chapter Eight

IMPLICATIONS FOR PLANNING OF EDUCATION

Looking ahead to surmise the education for a new century has important implications for the development of education from its present base. The surmising should not be limited to a one-time speculative exercise to mark the closing decade of a century. Viewing education in the perspectives of the future needs to be thought of as an essential dimension of educational policy making and educational planning; indeed as a new direction for educational planning.

While in almost all societal activities which aim to meet human needs and expectations, the future is to some degree embedded in the present, this is pre-eminently so in education, whatever the level or form of its development. The present education will shape to an important degree the total learning environment of a future. But quite as importantly, that future is also shaping the present by the image that the present education has of it, implicitly or otherwise. It is therefore somewhat puzzling that educational planning in its present forms and methodologies has tended to shorten its time-perspectives and breadth of focus. This has in turn tended to affect educational policy making.

Educational planning, taking a variety of forms, has been an influential force in the developing countries of Asia since the

1950s[45]. There is now available a considerable body of lessons of experience which points up the contribution of educational planning to the consolidation of the education systems as well as its constraints and limitations.

Much of educational planning has taken little account of "educational goals", and tended to treat educational goals setting as inoperable in terms of the planning techniques. The planning is based on projecting the present to the future time-frame and tends to be more pre-occupied with inadequacies and shortfalls of the past rather than exploring the needs of the future. Increasingly educational planning is seen as a way of resolving a 'crisis'. The "crisis" generated planning is focused on that "crisis" and its resolution in short-term. Thus for example the problem of quality is seen as an urgent need for more and better mathematics and science; or the development of the education system as a concern with one or the other level of education – higher education for manpower, claim some, or universal primary education, urge others. Increasingly pre-occupied with the quantitative, with the "crisis", with the systemic rather than what the system is for and with the short-term, educational planning has not found a mission of envisioning, stimulating and facilitating educational change and transformation. In the 1980s most countries in Asia-Pacific have recognized the need for a more comprehensive approach to education than that encompassed in the established educational planning methods, and have been engaged in developing educational reforms with a much wider focus. The conception of educational reform in the perspectives of multi-dimensional and long-term developments in society and in the learning environment will extend the reach, relevance and effectiveness of educational policy making and of its instrument, educational planning.

45 Author's **"Educational Planning in Asia"** (UNESCO : International Institute for Educational Planning, Paris, 1990 Ed.)

The future that is to be systematically explored and speculated about is not so remote that it loses its boundaries into utopia, nor so near that it gets crowded out by the immediate pulls and pressures. To be able to look a generation or so ahead might well be the right kind of time-framework. It should make possible reflection upon and assessment of alternative educational goals for the future, contexting and actively contributing to alternative societal futures; exploring the complex qualitative aspects of education and learning, and of the individual's growth in knowledge; and marking out new paths, new institutions and new structures of learning systems.

Of all organized human activities, education (next only to religion) is most multi-dimensional. That characteristic needs to find full expression in any exploring of the futures-perspectives and linkage with educational policy formulation. Within the multi-dimensional context, there are three elements or factors which help to define, though not necessarily determine, the educational futures. Firstly, there are variables outside the domain of education and embedded in the larger society, economic-political, developmental, technological, socio-cultural, institutional. The perception of how these variables in combination are likely, or need, to change over time is an important cross-over point between education and the larger society. Secondly, there are factors endogenous to the educational process such as the human factor, the issues of quality, knowledge and learning, the means and systems of education, etc. Then thirdly, overarching both the exogenous and endogenous variables are the issues of values, expressing the society's aspirations for that which continues and endures.

In the context of a national society and within the framework, broadly suggested above, the envisioning of the long-term, multi-dimensional future of education contributes directly to clarify, for policy making, the consequences of

different educational goals and the need to induce directional changes in the present in order to align it better to the conditions of the longer-term future environment. Policy-formulation in education, as in other sectors, is one of making choices. Traditionally, educational development and planning are conceived in terms of bringing about a change in the present situation in order to respond to a demand on the education system or to a crisis. The future-oriented education adds a new movement and a new direction. The image of education for the future, conceived, defined and described systematically and clearly, becomes the starting point located in the future from which to view and assess the present. In this scenario, the future begins to look back at the present; it becomes a "history of the future". Educational development, planning and innovation acquire a powerful conceptual and programmatic role in the "futures-history". The approach brings into relief the alternative paths and possibilities from which the policy as well as the programming choices need to be made. This leads to identifying the particular points in the complex sequence of "events" (from the future to the present) which are crucial and pivotal. The identification may suggest the need for interventions and the points to which they may be addressed. The future-oriented education approach compels a continuous scrutiny and appraisal of the existing educating systems and institutions, and calls for the development of new kinds of educational institutions as well as new ways of educating. One of the key areas of educational innovation is institutional reform and renewal; without such renewal, the institutional system becomes a drag on educational development. Future-oriented educational planning process is a powerful impetus in institutional renewal and in stimulating the creation of new institutions and knowledge networks. Such institutional reform and renewal will be needed also in educational planning and programming mechanisms with a view to investing them with the capacity on a continuing basis to study,

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analyze and anticipate changes on the national and international levels and think through their implication for education and the educating system, both formal and non-formal.

Planning which includes a future-oriented approach to education needs as much as does the traditional planning, adequate tools for analyzing the present situation which is in all cases the base for action. It is in the light of such analysis that the course of the future to the present can be charted. The kind of quantitative data (demographic, enrolments, teachers, etc.) which is the staple of educational planning may turn out to be quite inadequate. This area will need considerable study and investigation in order to develop meaningful "education indicators" to tell us what is happening in education which will be crucially important in exploring and "imaging" the future.

Education in the perspectives of the future is essentially education in the process of deep qualitative transformation. A qualitative change refers to the present and the future at the same time – that which is to change and the future which will be delivered by that change. Innovation lies at the heart of the change process, and its role is vitally important in future-oriented education. Innovation's role is not only making incremental changes possible; it lies more in delineating the strategy of change. The growth points of innovation are in areas where the transformation is deepest from the present to the future. Thus conceptualizing new educational goals, the institutional system and the division of educational mission between the formal and non-formal, the new integrated processes of knowing-learning-teaching, new partnerships in education (home, community, national and global) – imaginative and innovative changes and redirections in these and related areas will make a decisive difference between education for the future and a uni-linear growth pattern.

Human nature being what it is in the tug between the "now" and the future, it is not argued nor expected that educa-

tional policy and planning will not be concerned with the short-term or the crisis situation : rather, the longer time perspective will become more influential because it is developmentally more significant.

International Co-operative Action

The main focus of future-oriented education and its planning and development is at the national level. International co-operation and participation have an important contribution to make. There is first the "global" aspect of many of the changes that are affecting the countries, such as environment, the process of globalization, etc. Clearly in these areas the international communities can provide invaluable support and active co-operation. Then there is the growing range of initiatives in policies and programmes that national authorities are taking for the reform and renewal of their education systems. The wider framework provided by the futures-perspective in education needs to be linked to these initiatives as a matter of priority. By inter-country joint projects, exchange of experience and insights, joint deliberations and thinking, and exchange of well designed information, data and personnel, co-operation among the regional countries can contribute significantly to each participating country's efforts, both present and prospective. The international communities' co-operation is as important for the integrity of their intellectual mission as it is for the support of the countries. The new year of a new decade can well be the start of a new trail in international co-operation centred on education for the future; it need not be a one-time interest in ringing out/ringing in a century.

ANNEX

Annex

LIST OF SPEAKERS AND THEIR PAPERS given at the Regional Symposium in Bangkok (16-18 August 1990)

Title	*Author*	*Code No. of reference*
Education for the Future World	Dr. Shaikh Maqsood Ali	SYM/M.A-1
Educational Policies Towards the 21st Century	Mr. Isao Amagi	SYM/I.A-2
Asian Education for the 21st Century	Dr. Kim Duk-choong	SYM/D.C-3
Educating for the 21st Century	Dr. Peter Ellyard	SYM/P.E-4
Education and the 21st Century	Mr. A. Kadir Jasin	SYM/K.J-5
Preparing For the 21 st Century : Challenges for Education	Dr. Chitra Naik	SYM/C.N-6

Title	*Author*	*Code No. of reference*
Education for Tomorrow	Rev. Miguel Ma. Varela	SYM/M.V-8
Education for the Future	Dr. Prawase Wasi	SYM/A.W-9

In this publication, references to the papers are made using the code numbers in the last column

A limited stock of copies of the above papers are available on request from the Asian Centre of Educational Innovation and Development

Other references

On 27 November - 2 December 1989, UNESCO convened in Beijing, People's Republic of China an *International Symposium and Round Table*. The Round Table *Report* is titled, "Learning to Care : Education for the Twenty-First Century".

The *Report of* the Symposium is also titled "Learning to Care: Education for the Twenty-First Century". In this publication they are referred to as Round Table Report and Symposium Report.

ABOUT THE AUTHOR

Dr. Raja Roy Singh (India) has had extensive and varied experience in education, first at the national level as a State Director of Education and subsequently as an Educational Adviser at the Federal Ministry of Education. Joining UNESCO in 1964, he was based in Bangkok where for the next twenty years until his retirement he was deeply involved in international co-operation for the promotion of education in the region of Asia and the Pacific as Regional Director of Education and later as Assistant Director-General of UNESCO in Asia and the Pacific. He has written extensively on educational problems in the developing countries. His publications include: *Education in Asia and the Pacific* (UNESCO/Bangkok, 1966) *Adult literacy as educational process* (International Bureau of Education, Geneva, 1990), *Educational Planning in Asia* (International Institute for Educational Planning, UNESCO, Paris, 1990 ed.)

The Asia and Pacific Programme of Educational Innovation for Development (APEID) has as its primary goal to contribute to the building of national capabilities for undertaking educational innovations linked to the problems of national development, thereby improving the quality of the people in the Member States.

All projects and activities within the framework of APEID are designed, developed and implemented co-operatively by the participating Member States through nearly 200 national centres which they have associated for this purpose with APEID.

The 29 Member States participating in APEID are Afghanistan, Australia, Bangladesh, Bhutan, China, Democratic People's Republic of Korea, Fiji, India, Indonesia, Iran, Japan, Lao People's Democratic Republic, Malaysia, Maldives, Mongolia, Myanmar, Nepal, New Zealand, Pakistan, Papua New Guinea, Philippines, Republic of Korea, Samoa, Socialist Republic of Viet Nam, Sri Lanka, Thailand, Tonga, Turkey and Union of Soviet Socialist Republics.

Each country has set up a National Development Group (NDG) to identify and support educational innovations for development within the country and facilitate exchange between countries.

The Asian Centre of Educational Innovation for Development (ACEID), an integral part of the UNESCO Principal Regional Office for Asia and the Pacific in Bangkok, co-ordinates the activities under APEID and assists the Associated Centres (AC) in carrying them out.

In the fourth cycle of APEID (1987-1991), seven programme areas have been selected for the purpose of concentration. These are:

1. Universalization of primary education
2. Continuing education
3. Education and the world of work
4. Restructuring secondary education
5. Educational technology and information technology
6. Training of personnel including professional support services and distance education
7. Science and technology education including science for all.

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